

ECONOMICS OF SHIPPING

A STUDY IN APPLIED ECONOMICS

BY

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WITH A FOREWORD

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FOREWORD.

This admirably written book deserves to be warmly welcomed in the first instance by the Indian mercantile community and in the second place by the general public who have, for some time past, become fully alive to the vital necessity of developing on well-conceived, sound and practical lines, the productive resources of India with the view of increasing its greater prosperity. One of such activities is the revival of the old ship-building and ship-owning industries. The need for India to possess a national mercantile marine of an up-to-date character has recently been greatly felt by the Indian commercial community. It is now well known that India loses a most profitable source of wealth by reason of the coastal shipping being monopolised, in the main, by foreign capitalists—a trade the gains of which annually amount to lakhs of rupees. The absence of an indigenous mercantile fleet has been so keenly felt and accentuated that the Government of India was obliged to appoint a special committee to consider what measures can usefully be taken to develop an Indian Mercantile Marine. The report of the committee, which is now before the public, recommends the adoption of various measures to achieve the end in view. Meanwhile, the practical difficulties in the way of the profitable operation of a merchant fleet

remain as strong as ever. Mr. Haji's work seeks to explain these difficulties and suggest their remedies.

The book is also to be welcomed as the fruitful product of the patient industry and research of a talented Indian trained and graduated in history and economics in the great university of Oxford which, along with her sister of Cambridge, has during the last half a century and upwards sent forth many a bright son of India, fully equipped, from the late Mr. Satyendranath Tagore down to date. It is indeed gratifying to note that the Science of Economics is being steadily regarded and cultivated not only for its intrinsic worth but for its practical utility. No doubt during the last few years, some excellent and praiseworthy books have been published on Banking, Currency, Finance and Railways as well as on Commerce and Industries, but none on Shipping in its practical aspects as a great future industry of a wealth-producing character save that solitary work by that learned research scholar and historian, Professor Radhakumud Mookerji, on "A History of Indian Shipping and Maritime Activity from the Earliest Times". The book on the "Economics of Shipping" by Mr. S. N. Haji is, therefore, the first of its kind by an Indian gentleman possessing both the academic and practical qualifications necessary for making a detailed analytical study of the subject in all its aspects. So far it will not be denied that it is unique in its way.

The author has essayed, and I may add essayed successfully, to present to his countrymen in a practical

form, from his close personal knowledge and experience, the economics of shipping industry, with the view of concentrating the attention of Indian industrialists of courage and enterprise on the importance of building by slow degrees a mercantile marine, specially for thousands of miles of the Indian coast, of which we may well be proud and which may, it is to be hoped, eventually form the nucleus of a nascent Indian navy for purpose of defence on the coast and sea routes of Indian trade, side by side, with the great navy of Great Britain with its glorious traditions of three hundred years and more. The publication of this book at a time when the Indian Mercantile Marine Bill is to be placed on the anvil of the Indian Legislative Assembly is most opportune. It should be in the hands of every member there, as it is full not only of the first principles of Shipping Industry but replete with a wealth of statistical information which only a patient student of research and grasp of his subjects alone is capable of treating scientifically. What those principles and what the mass of useful and valuable information are may be well studied from the pages of this book. To encumber this brief foreword with them will be superfluous. But it may not be unuseful to draw special attention of the Indian industrial and commercial public to the able treatment of some of the knottiest points which are certain to form the subject of an interesting and instructive debate in the Assembly. The points are well put but, like in other large questions, there is the other side to them to which

also the intelligent public will look forward to learn with equal interest and instruction as are to be found in the following pages.

All lovers of a temperate and fair criticism should therefore welcome the volume so far as it is written with a single eye and laudable purpose to educate the public and instruct them in one of the momentous industrial problems of the country of a far reaching and beneficent consequence.

D. E. WACHA.

4th August 1924.

PREFACE.

The object of this book is to present a scientific treatment of various economic problems involved in the management of the shipping industry. The questions regarding shipping capital, expenditure and rates are treated in the light of the general principles that govern the problems of transport. In the absence of any adequate treatment of the subject of shipping, the author had to examine the general theories of railway problems which have been exhaustively dealt with by experts in various countries and to evolve therefrom principles of general application to sea transport as well. It will thus be seen that the actual field of this work has not been trodden before. It is, therefore, hoped that this book will serve to indicate the main lines along which a scientific enquiry of the subject of the shipping industry may proceed.

It will be readily seen that, the treatment of the subject being general, the book would serve a useful purpose in all countries interested in shipping. Ship-owners in particular will find in it scientific explanations for their daily work while students in general will find a full exposition of one of the main branches of commerce.

In view of the deplorable fact that India, though a vast maritime country, does not to-day possess a

national mercantile marine, it has been thought desirable to add a special chapter to explain the shortcomings of the present position and the necessary remedies to cure the same. It is a hopeful sign that the Government of India, admitting the necessity for India to have its own mercantile marine, appointed last year the Indian Mercantile Marine Committee to investigate various problems connected with Indian shipping. In view of the fact that the author was intimately associated with the work of the Indian Mercantile Marine Committee and particularly because almost the last pages of this book were being printed when the report of this Committee was made available to the public, it has been thought desirable to omit any detailed reference to the work of the Committee from the pages of this book. However, now that the report is published, it will not be out of place to draw the attention of the reader to the fact that the main recommendations of the Committee are along the lines advocated by the author in his Pamphlets on Indian Shipping published long before the appointment of the Committee in February 1923. The two main desiderata in any scheme intended to develop a mercantile marine for India are (1) Reservation of the Indian Coastal Traffic to Indian vessels and (2) Abolition of the Deferred Rebate System together with the discriminations arising thereunder. These two measures will be found specifically mentioned in the draft of the Indian Merchant Marine Bill which is appended to the last chapter of this book.

Owing to the necessity of keeping the subjects under treatment within reasonable limits, it was not found possible to discuss within this book, as being outside its scope, the general question of nautical training for Indians but the author would like to add his quota of commendation due to the Indian Mercantile Marine Committee for suggesting a very thorough and practical scheme to enable Indians, in adequate numbers, to be trained as deck officers and marine engineers to man the Indian Mercantile Marine of the future.

Finally, there remains the pleasant duty of acknowledging obligations to all the gentlemen who, in various ways, have added to the value of the book. It would be invidious to mention names. It is, therefore, hoped that this general acknowledgment will be accepted as an expression of the profound thankfulness of the author to all who have helped him to present an adequate treatment of themain the me of the book.

7th August 1924.

S. N. HAJI.



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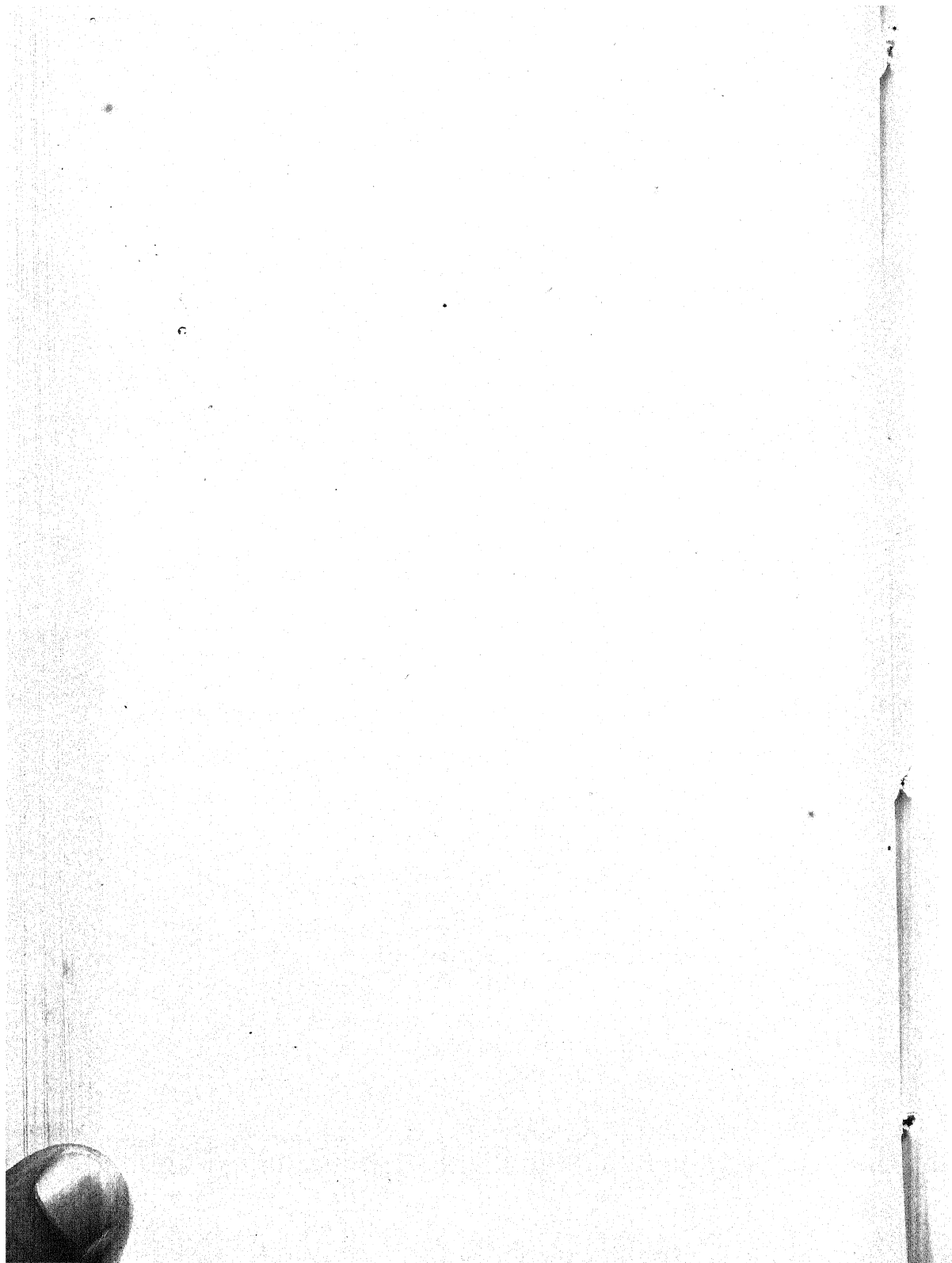
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ECONOMICS OF SHIPPING

CHAPTER I.

PRINCIPLES OF SHIPPING ECONOMICS.

The shipping industry, though controlled to a large extent by private agencies, has this much in common with the Public Exchequer that like the Finance Minister of a Government, the Traffic Manager of a Shipping Company has to think primarily of expenditure, leaving the question of revenues for later consideration. But there the similarity between the Exchequer and the shipping of a country ends. Economical or extravagant, the Government always succeeds in raising the revenues it wants, whilst the income of the Mercantile Marine is dependent upon factors which the traffic manager cannot control. The manager of a modern shipping company, which has invested large capital in up-to-date ships, has, even in times of normal trade, carefully to co-ordinate the interests of the shareholders on the one hand and of the shippers on the other if a reasonable rate of interest is to be earned on the capital invested in the industry * and necessary facilities provided for the requirements of commerce. Besides, the economic considerations

* References to shipping as an industry are to-day the commonplace of official blue-books, both English and foreign. Besides, just as a textile mill, by the employment of machinery manufactures piece-goods out of cotton, a ship by its propelling power "manufactures transport" for the cargo it carries. Transport creates place-values just as manufacture, ordinarily so-called, produces form-values.

that guide the destiny of the industry are so peculiar that too much attention can never be paid to them in the daily routine of the ship-owners' office.

Prof. Taussig was the first to point out about a generation ago * that modern transport expenditure presented a prime illustration of the economic principle of joint cost of production, *i.e.*, of the production of several commodities by a single great plant simultaneously at joint and indistinguishable cost. This principle of joint cost, as it may be called in short, was originally introduced by the classical economists who illustrated it by well-known examples of the joint production of wool and mutton and of gas and coke. Neither of these commodities, it will be seen, could be produced alone ; nor can one be called a bye-product of the other, at least not in the scientific sense. The two commodities being thus of nearly equal importance the cost of production of each may be determined approximately by dividing the total cost by two, or in the case of more than two articles of varying value being simultaneously produced, by dividing the total cost in proportions representing the relative worths of the products or commodities. On applying this principle to the carriage of goods, however, we find various contrasts between the production of transport and the production of commodities, which

* A contribution to "The Theory of Railway Rates," (Quarterly Journal of Economics, Vol. No. 5, 1891, pages 438—465).

may be well brought out by a comparison of the operations of an oil refinery in Burma, producing simultaneously kerosine, gasoline, lubricating oils and greases, as well as various odd chemicals, with the carriage along the coast of India of hundreds of different commodities in every direction and under varying conditions of size, speed and stowage. While in the oil refinery all the costs are joint, in the case of shipping a part only of the costs are joint in the technical sense of the word. While an increase in the output of the kerosine produces simultaneously an increase in the production of the other commodities, the growth of a shipping company would be illustrated by the provision of transportation of different kinds and mutually independent in character; thus the alternatives before the Traffic Manager of a Shipping Company may lie between the development of its passenger traffic, its cotton or coal business, its transport of rice or of manufactured goods. It may even happen that rivalry may set in between the different branches of a department and the Traffic Manager may even have to choose between say the development of his deck or cabin passenger traffic if the manufacturing plant, a ship under steam, is to be utilised in the most economical manner. It is clear that this kind of antagonism cannot exist between the simultaneous products of the oil refinery; more kerosine would automatically mean more gasoline, grease, etc. The law of joint cost as enunciated by the classical economists cannot, therefore, be

applied literally to cases of transport except with serious and important modifications.

But perhaps a clearer illustration of the application of the principle of joint cost to transport may be had from the analogous case of the joint production of cotton fibre and cotton seed not to mention the resulting oil and the oil-cake. Howsoever we may apportion the cost of production among the various commodities produced, the market price of each one of the joint products would depend upon the relative demand for it, *i.e.*, upon its marginal utility.

Just as the marginal utility of cotton fibre, cotton of commerce, being greater than that of cotton seed, a higher price is paid for the former than for the latter—though the same processes are gone through in the production of each—the marginal utility in Rangoon of spices from the Malabar coast being greater than that of coir, a higher freight is demanded and paid for the former than for the latter.

The principle of joint cost is, therefore, in practice modified by that of marginal utility. The other important modification of the joint cost principle namely extra cost incurred on preparing each of the joint products finally for the market, also applies to the question of shipping in so far as the freight rates partly depend upon the method of packing employed in particular cases.

The joint cost of production of transport requires, moreover, a large capital outlay which in turn requires large scale production if sufficient returns are to be obtained. Large scale production may lead to a monopoly or may at least facilitate its operation in practice. It may here be noted, by way of contrast, that where a homogeneous commodity as cement or steel rails are produced by a large plant, the law of joint cost does not come into operation, though the price of the article may be high due to a monopoly. Now as Professor Taussig says—

“Either monopoly alone or joint cost alone entails consequences for value which diverge far from the simpler cases. When the two are combined, a variety of interacting forces must be considered—joint and separate cost, marginal utility and elasticity of demand, monopoly and maximum profit, and the effects upon monopoly of possible competition, of public opinion and public regulation and of inert management.”

If for the word, inert, we substitute the word “expensive,” the quotation would well fit in with the conditions prevailing in shipping circles throughout the world in general and along the Indian coast in particular. So far as the possible effects of competition upon the monopoly are concerned, it will be found that the use of the rate war against new companies and of the deferred rebates against the existing customers of the company combine to oust the competition in a

short time if and when it actively asserts itself. In countries with representative forms of government the monopolist is controlled, howsoever inadequately, by public opinion, but when the public opinion of the country has no say in matters governmental, as in India, it stands to reason that it should fail to guide the activities of private foreign organisations particularly when they are backed up by the Government in power. This has particularly been noticeable in the case of the grievances of Indian deck passengers whose lot is now hardly better than what it was about a generation ago in spite of various Government Committees and their bulky reports. When public opinion fails to operate public regulation need not be expected ; hence the British shipping monopoly in India has so long maintained its expensive organisation at the cost of the Indian shipper and ultimately the poor Indian consumer. Monopoly and maximum profit are thus the two notable features of the present foreign shipping organisations which "serve" the needs of India.

Shipping is in itself an enterprise tending to a large scale organisation, the abuses of which may react upon the country as a whole. America affords a good illustration of political corruption and social tyranny resulting from concentrated commercialism; current American phraseology has already created "oil kings" and "timber kings" vying in political power and certainly excelling in material wealth, their "political king," the President. Even in England, political think-

ers have recently, during the stress, or as a result of the experience, of war, realised the possibility of large scale journalism setting up itself in conflict with the state. Theoretically, at least, the danger from syndicated shipping is no less—perhaps much greater—due to the mercantile marine being the second line of the nation's defence. Transport of the modern type presents the most familiar cases of citizens controlling resources which might be used to anti-social ends; for example, a few shipping magnates control a very large proportion of available British tonnage. Patriotism prompted them to be of great service to the state during the last Great War. By the importance of that service may be gauged the serious harm likely to result from recalcitrance on their part. Transport, whether by land or by water, affords, therefore, an excellent subject for public control and if need be for public ownership; at all times, however, it must be kept under the vigilant eye of the state so that the slightest tendency towards the emergence of a possible rival may be nipped in the bud. Even ordinarily in the long run, of course, the state could make itself felt and have its instructions carried out; but the spirit of genuine co-operation would be wanting in such service grudgingly rendered. In other spheres, too, examples of a like nature are not wanting. The evolution of the state itself affords a striking illustration, in one of its stages, of the creation of an *imperium in imperio* which ended with the abolition of the temporal power of the Church. A healthy modern state could ill afford such over-growths, tendencies to

which must be watchfully looked for and scotched on appearance.

Reference has already been made to the fact that the shipping organisations in India are expensive. They are so in more senses than one. Their superior staff, both on the seas and in the offices, is non-Indian and highly paid. Their net income is a drain of national resources. Their activities, moreover, have given, as will be seen later, a wrong trend to the commercial and industrial life of the country. Fortunately, however, for other countries, such anti-national activities are not recorded in the history of their trade and commerce. Unfortunately for India, the economic history of the country right up-to-date contains many instances of the subordination of Indian interests to imperial and foreign requirements due to the trade and transport agencies being mostly controlled by non-Indians residing out of the country. Exploitation of the natural resources, carried on under such auspices, cannot bring much economic gain to the country. Raw products are taken out of the country on the cheapest possible terms. Out of the small receipts thus realised, a large proportion is spent in consuming the costly imported article made out of the natural product exported at the initial stage of the series of transactions, which result in leaving a country—rich in natural resources,—poor in earthly possessions. Transport or rather the ways in which it has been managed so far is, to a great degree, responsible for the

present economic backwardness of this country. Railways and steamers with their Boards of Management in England have so far been run for the real benefit of others. Shipping particularly has given a wrong bias to the position of India in international trade. In the world emporium, India, for want of parental solicitude, appears as a Cinderella, rich in her natural lines only, whereas proper care would have presented a princess, decked in variegated fineries of indigenous manufacture.

The shipping industry, in normal times, affords a very good illustration of the Economic Law of Increasing Returns. That is to say, it is an industry in which, after a certain stage, the cost of operation grows less rapidly than the volume of business done. Each ton of freight added to the existing traffic adds relatively less to the haulage cost. It follows, therefore, that the net return increases more than proportionately with the growth of expansion of traffic. Take for example a 7,400 D. W. tons steamer capable of carrying 6,700 tons of rice from Rangoon to Bombay (the balance of the dead-weight capacity being occupied by bunkers, water, stores, etc.). Suppose for example that the total cost of loading, carrying and discharging the rice in Bombay and returning the steamer in ballast to Rangoon amounts to Rs. 80,000. Taking Rs. 16 per ton as the prevailing rate of Rice freight from Rangoon to Bombay, a cargo of 6,000 tons ought to meet the total expenses of the trip and leave a reasonable

amount of profit. Every ton of cargo carried beyond that amount reduces the cost of carriage per ton, particularly in those items which form the constant items of expenditure for a ship under voyage, *i.e.*, upkeep (wages, stores, provisions and repairs, etc.), insurance, management expenses as also in the other items of bunkers, port dues and sundry expenditure. It may further be remarked that the quantity of the cargo carried would also make a slight difference in the amount of claims for shortage and a larger difference in the stevedoring charges. Roughly, therefore, we may conclude that every ton of cargo taken after the quantity necessary to provide the working expenses of the voyage and leave a fair margin of profit adds directly to the net profit from the operation of the ship.

The question of the Law of Increasing Returns or in other words, the tendency to decreasing cost per unit of traffic may perhaps be better illustrated as follows :—

Taking a steamer of 7,400 tons carrying 6,700 tons of rice from Rangoon to Bombay and back in ballast, we find that 6,000 tons, at a freight of Rs. 16 per ton, will yield, on the basis of 10 round voyages a year, and on the capital invested in the ship, say Rs. 11 lakhs, a profit of 13·9 per cent per annum which may be regarded, as a fairly reasonable rate of profit in view of the unknown factors which often face the shipping industry. For every successive increase of 100 tons of cargo the amount of profit rises by

1·3 per cent approximately. Thus the above steamer, on her capital outlay of Rs. 11 lakhs, would earn a profit as follows :—

Cargo Tons.	Profit Rs.	Percentage on capital cost of 11 lakhs.
6000	16,000	13·9
6100	17,600	15·3
6200	19,200	16·7
6300	20,800	18·1
6400	22,400	19·4
6500	24,000	20·9
6600	25,600	22·1
6700	27,200	23·6

The series could no doubt be continued, at least on paper, to say 10,000 or even 20,000 tons, but in practice, every trade has a maximum unit of quantity for shipment per steamer beyond which the commodity cannot be economically handled. That figure sets a limit to the size of the steamer plying the trade in question. A steamer of the size mentioned, carrying 6,700 tons of cargo per trip, meets the normal requirements of the coastal traffic of India.

It is thus seen that, while the cargo increases by 1/60 of 1 per cent, the profit increases by 1·3 per cent approximately. This result is, of course, obtained by taking the figures above the amount required not merely to make both ends meet in running a steamer, but to leave a fair percentage of profits upon the capital invested in the ship. If we,

however, take the marginal case in which the ship-owner would rather lay up his steamer than run her, we will find that the proportion of the percentage illustrating the application of the law of increasing returns will be higher. 5000 tons would provide in our illustration the marginal quantity which will just meet the bare costs of transport and stevedoring. It will then be found that every addition of 100 tons of cargo at the given rate of Rs. 16 would leave an additional profit of Rs. 1,600. In other words, every increase of $1/50$ of 1 per cent would show a corresponding increase of 1.3 per cent in the profits.

The complementary Law of Diminishing Returns applies with equal force to shipping rates. When traffic diminishes, only a portion of the costs could be reduced ; in other words, a reduction in the volume of traffic does not necessarily mean a corresponding reduction in the operating cost of the steamer. Attention may here be drawn to a peculiar feature of water transport which differentiates it from rail transport. The unit that transports goods by rail is made up of component parts and its size may be changed according to demand. The unit that transports goods by sea is one and indivisible. While the railway locomotive need not pull more waggons than are actually required for the work in hand, a 7500 ton cargo steamer moves as one piece whether fully loaded, half loaded or in ballast. It is, of course, possible that slight reductions may be made by the postponement in times of dull

business, of urgent repairs, etc. This is, however, a policy which can hardly be recommended because the proverb—‘a stitch in time saves nine’—applies as much to a ship as to a shirt. Under such circumstances, therefore, unless the rates charged for services are reduced in order to stimulate traffic, it is inevitable that the margin of profit will drop as rapidly as it tends to rise with increased volume of business. If, however, trade continues dull, even the small profit may be replaced by a loss growing with the decrease in the quantity of the cargo available. Thus taking the marginal figure of 5,000 tons of cargo at Rs. 16 per ton, the position stands as under:—

Cargo Tons.	Loss Rs.
5000	...
4900	1,600
4800	3,200
4700	4,800
...	...
...	...
...	...
3750	20,000

i.e., the loss increases by a much greater ratio than that of the corresponding decrease in the quantity of cargo carried.

The operation of the Law of Diminishing Returns may also be noticed in the case, where the marginal

quantity of cargo remaining constant, the rate of freight varies as follows:—

Rate of Freight per ton. Rs.	Loss on Carriage of 5,000 Tons.
16	...
15	5,000
14	10,000
13	15,000
12	20,000

Here too, while the rate decreases by one rupee, the loss increases by Rs. 5,000 at each stage. Moreover where both the factors, namely the reduction in the quantity of the cargo and in the rate of the freight act simultaneously, the operation of the Law of Diminishing Returns will be very intense and injurious to the interests of the industry.

Of course, in ordinary business life, we find that each time the marginal limit is reached the ship is not laid up, because questions of regularity of service or contracts of carriage, or other commitments arise, which make it desirable that the ship should be run even at a loss in order to provide the necessary transport service, or in order that advantage may be taken, at a later date, of the possible rise in the rate of freight.

It is as a result of the operation of the Law of Diminishing Returns that the steamer companies find it, in times of trade depression, a cheaper policy to lay up the steamer than to send her backwards and for-

wards at ruinously low rates of freight. The laying up, of course, as said before, does not follow immediately the marginal limit is reached, but is postponed to a date which indicates the practical certainty that for months together, as a result of trade depression, there would not be any demand for space at even the marginal rate of freight. In our particular instance the steamer would be laid up only when she could, for a series of voyages, get, per voyage, no more than 3750 tons at Rs. 16 per ton or 5000 tons at Rs. 12, the carriage of which would mean a loss approximating the cost of laying up the steamer for an equivalent period, amounting to about Rs. 20,000 per month.

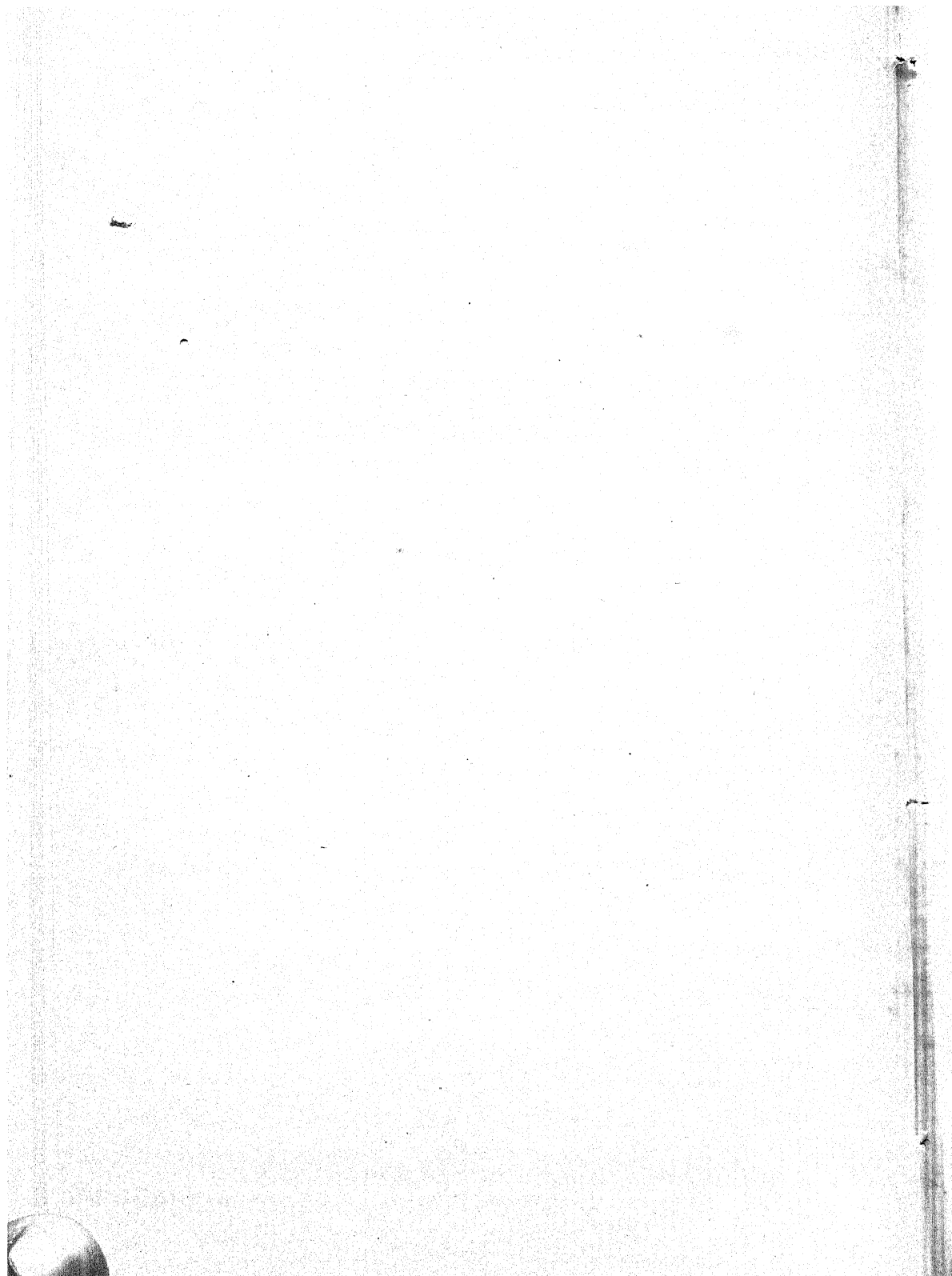
The economies effected by laying up a steamer refer primarily to the ordinary costs of running her. While almost all the variable costs disappear, even the item of port dues, if she is laid up in stream, only the constant items continue to operate with the insurance premium reduced by about 90 per cent. of the normal amount payable when the steamer is running. * These calculations well illustrate the keen watch that must be kept upon the operating expenses of a shipping company particularly in times of dull trade.

The many quick and sudden changes in the character of the shipping industry as a paying proposition may be further studied by a consideration of the application of the two Laws of Increasing and Dimini-

* It should, however, be remembered that a steamer depreciates in value, more when laid up than when running.

shing Returns from the point of view of the long and short term production of transport "manufactured" by the shipping company. The distinction between the long and short term production is well known in the case of the economics of factories; but its application in the case of transport by sea also deserves notice. What makes this question so interesting is the suddenness with which the available tonnage becomes inadequate for the trades it has to serve, and on the contrary the sudden decline in demand which necessitates the laying up of so many steamers simultaneously. As Prof. Ripley says, "the limit of full working capacity in a factory is illustrated by reason of the fact that under the 'peak of load' in busy seasons it may prolong operations beyond the daylight hours or at worst work all night by double shifts." A ship, however, normally steaming 24 hours a day cannot expand its working capacity at will. In years of very busy trades, all the available tonnage being thus occupied at all hours of the day and night, congestion is experienced to an extent unknown in the factory. At such times second-hand tonnage is difficult to obtain; and the fact of a ship being by its very nature an article which cannot be immediately called into existence by word of command, leads to those very high freights which rule for a time in the freight markets of the world. Attention may here be drawn to a result of the inelastic nature of the industry in so far as it necessitates the provision, even in normal times of a tonnage which

will meet the requirements of the world at moments of its greatest demand. One result of this supply being constant and the demand fluctuating is that in times of trade depression the rates of freight reach surprisingly low levels as will be seen from the graph on page 68 from which it follows that, in times of decline, the industry being inelastic is in a worse position than other manufacturing industries which can change their output to meet the changing demand of the market. If ordinary times must bear the cost of maintaining ships which would be required in abnormal times, it follows that, the normal rates of freight must be high enough to more than cover the cost of service, the interest on capital and a reasonable rate of profit. Moreover, if a shipping company is not to be wound up during a long period of depression, it is essential that it should have large capital reserves to fall back upon in the event of a long spell of commercial stagnation.



CHAPTER II.

SHIPPING CAPITAL.

Capital expenditure in shipping primarily depends upon the type and size of the vessels selected, the nature of the trade served and the time when the purchase is made. Taking the last first, a study of the shipping values for the last quarter of a century will show that wide fluctuations are rather the rule than the exception in the tonnage market. The history of these fluctuations during the last twenty-five years teaches many lessons which a buyer of new tonnage will be ill-advised to neglect.

Taking for our standard a new, 7500 tons dead-weight, single deck steamer, 380 feet in length, by 49 feet in breadth and by 29 feet in depth with a draft, fully loaded, of 23 feet 8 inches, we find that its value in Great Britain has fluctuated from £ 36,000, *i.e.*, £ 4-16-0 per ton in the middle of 1908 to £ 2,32,500 or £ 31 per ton in the December of 1919.

It is worth noting however that the highest price ever paid for such a vessel before the Great War was in 1900 when the price of the standard steamer which, towards the end of the last century was fluctuating round about £ 50,000 suddenly, jumped up to near £ 61,000. There was an equally sudden fall which was, with various unimportant exceptions, practically

not arrested until the record year of low values 1908, A. D. Freights, however, began gradually to improve and a 7500 d. w. tons steamer was sold at £ 58,000 in November of 1912 when again the ebb set in and it is believed that the tonnage value of new single deck steamer would have again reached in a few years the very low figure of 1908 had not the Great War, with its high freights, caused the shipping values to soar to unexpected heights and rendered possible a record in the other direction. With the Armistice, however, the prices of ships again began to fall so that a 7500 d. w. ton steamer with the specifications given above may be purchased to-day at a price ranging between £ 65,000 and £ 70,000, *i.e.*, at about £ 9 per ton dead-weight. The intimate relationship between the ruling freight rates and the shipping values will be evident on a comparison of the above figures with the chart on p. 68 illustrating the freight history since 1870.

It should be noted that the value fluctuations, the bare outline of whose history has been given above, refer merely to a standard steamer of 7500 tons dead-weight with certain measurements. However the size, draft, speed and other special specifications of a steamer also affect her price in varying proportions. The amount of detailed care to be taken when ordering the construction of a steamer will be partly seen from the following instructive summary of the effects of specifications on prices taken from a well-informed article in the annua

number of the "Fairplay" for 1921. As regards the influence of size upon the price of a steamer it is stated that if an 8,000 tonner is taken at a certain basic rate per ton, it is found that for a similar class vessel, but reduced dead-weight, at 4,600 tons, the rate per ton has increased by £ 1. Another addition of £ 1 is experienced at 3,500 d. w., and further additions of £ 1 each time are found at dead-weight of 2,750, 2,250 and 1,900 while below this the rates per ton increase at a very rapid rate. The paradox is, of course, easily understood if it is remembered that the cost of the various articles required to build a steamer does not vary in proportion to their size.

Besides the differences in dead-weight tonnage, the tonnage openings make an appreciable difference in the price of a steamer. An "open" shelter-deck steamer would cost about £ 1 more per dead-weight ton than a "closed" shelter-deck type, the former having the advantages of an increased free board and a reduced draft.

Draft is another important factor affecting the values of merchant ships. A vessel to carry 6,000 tons dead-weight on 22 ft. 6 in. draft could have length and breadth of 339 ft. by 48 ft. but, if it is desired to carry the same dead-weight on only 21 ft. 6 in. draft, it will be necessary to increase the length and breadth to 348 ft. by 49 ft. 3 in. The depth would, of course, be reduced by about 1 ft. 2 in. but

depth, it must be remembered, is the cheapest dimension of the three, length being the most expensive. In fact the vessel of 21 ft. 6 in. draft requires 55 tons of steel in excess of the amount required to build the vessel of same dead-weight on 22 ft. 6 in. As a result of the increased dimensions more timber and possibly more equipment will be required—while the labour cost will also be greater. The net result in a vessel of this size would be about Sh. 4/- per dead-weight ton for a change of one foot in draft.

Speed is one of the most expensive factors causing variation in the cost per ton dead-weight. If the speed of a 6,000 ton vessel is to be increased from 10 to 11 knots, other specifications remaining the same, the following alterations have to be provided for :—
 (a) A finer block co-efficient ;* (b) an increase of about 39 per cent in indicated horse power requiring larger engines and boilers, the increased weight of which will amount to nearly 100 tons ; (c) because of the finer block co-efficient and the increased weight of machinery, the dimensions will require to be increased so as to maintain the dead-weight ; (d) the increase of dimensions will add an extra weight of about 60 tons of steel.

The net result is to increase the cost of the hull by about Sh. 4/- per dead-weight ton, and the machinery

*Block co-efficient = $\frac{\text{volume of displacement}}{\text{length} \times \text{breadth} \times \text{mean draft}}$ of the vessel.

by about £ 3,600, or Sh. 12/- per dead-weight ton, or Sh. 16/- per ton all told.

Again comparing two vessels of identical dead-weight, although of similar type and specification, but one having a draft one foot shallower, also one knot more speed, than the other, the difference in value is exactly Sh. 20/- per dead-weight ton.

Specifications according to special acts and additional equipment also make a difference in the cost of a vessel. Thus the complete equipment of a vessel for Grain Act purposes is worth about Sh. 5/- per dead-weight ton in average cases. In a 2,500 tonner the difference between single winches and derricks and double winches and double derricks amounts to nearly Sh. 10/- per ton dead-weight and a small donkey boiler alone would be worth a further Sh. 5/- per ton.

So far we have dealt with the influence of specifications upon steamers of a particular standard type. The types of steamers themselves however would also account for variations in their prices.

Steamers may be classified upon a variety of principles. The *nature* of the service gives us the popular division of merchant vessels as passenger vessels, cargo vessels and combination passenger and cargo vessels. The *regularity* of the service or otherwise gives us the liner and the tramp.

Steamers may also be classified according to the *material* used in the construction of their hull such as

iron, steel, concrete, wood, etc.; or according to the *motive* power—steam engines which may be reciprocating or turbine, and internal combustion engines which are worked with oil or gas; or according to the method of their *propulsion* by paddle, single-screw or twin-screw.

• Taking the *superstructures* as the basis for classification, ships may be divided into types developing from a flush deck vessel without any superstructure to one with a complete superstructure.*

This principle of division however though evolutionary does not bring out the *structural* features of a steamer. For this purpose, therefore, steamers are classified as follows:—

- (1) The full scantling vessel;
- (2) The spar deck vessel;
- (3) The awning deck vessel.

The various modifications of these types include Raised Quarter Deck Vessels, Partial Awning Deck Vessels, Shelter Deck Vessels, Shade Deck Vessels and such novelties as Turret Deck Steamers, Trunk Deck Steamers and Self-trimming Steamers.

It is worthy of notice that the structural classification has been adopted in the tables and rules made by the British Parliament under which load-line certificates

* A superstructure may include a bridge only, or a poop, a bridge and a forecastle separately, or a forecastle and poop and bridge combined.

are given to British ships, while both the structural and the superstructural classifications are followed by the new rules published recently by the Lloyd's Committee for the building of steel vessels which refer to two basic types denoted "Full Scantling Vessels" and "Complete Superstructure Vessel."

The full scantling vessel is the most popular in the cargo trade because in addition to great structural strength it fulfils all the conditions of an economical cargo ship. It has a low registered tonnage as compared with its capacity thus economising in the payments of various dues, simultaneously with carrying the maximum quantity of cargo per net registered ton. Such a vessel has large hatchways and holds free from obstructions. Sufficient space is available for water ballast which is very useful when fairly long voyages may have to be made in ballast during dull periods. It is the best ship for heavy cargoes.

When, however, bulky cargoes with small density such as cotton and various kinds of package freights form the chief shipments in a trade, employment of full scantling vessels would mean that though the available space of the ship would be occupied, the steamer would not be loaded down to her marks, *i.e.*, the steamer would not be immersed to her maximum draft. To meet such a case, the awning deck vessel is used as it combines considerable volume with smaller immersion and carrying capacity.

Between these two kinds of steamers stands an intermediate type which is suited for mixed cargoes of moderate size and density. The spar-deck vessel, as this type has been called because the spar-deck forms an integral part of the hull, has been recently very popular as a mixed passenger and freight vessel.

For purposes of general cargo transport, however, the full-scantling vessel, as said before, reigns supreme because it has great carrying power and strength combined with the minimum volume or space—requirements essential for carriage of general cargo which mostly consists of articles of great density compared with their bulk such as coal, rails, machinery, iron and steel products, etc. It is, therefore, to this type that a large number of modern cargo vessels belong, as a result of which some remarkable sub-types have been evolved to meet various particular requirements.

Turret deck and trunk deck vessels were evolved from the earlier American whale-back steamer, so called because of its resemblance to the sea-animal, and were once very popular in the Eastern trade as under the Suez Canal measurement rules, the turret being regarded as merely an erection, the vessel had to pay the canal dues on only a little more than half the cubic capacity. Besides by the employment of these steamers in the carriage of homogeneous cargoes such as grain, the use of shifting boards is abolished as the turret forms a feeder from which the cargo can shift into the lower

holds, keeping them completely full, and the shifting in the turret is of small consequence to the stability of the ship.

Structurally the turret lends great longitudinal strength to the ship—a fact particularly note-worthy in view of the popularity of the Isherwood system of longitudinal construction. So much has been heard, during recent years, about this method of ship construction that the following summary of its main features will be read with interest:—

“*First.*—The necessary transverse strength is provided by a series of transverses composed of deep webs of plating spaced 12 or more feet apart in ordinary cargo vessels forming continuous transverse girders round the whole internal circumference of the vessel; each transverse therefore embodies the function of a very strong frame, beam and floor, and is directly attached to the shell plating and deck. They are made of sufficient strength to resist the whole collective water pressure on the sides and bottom.

“*Second.*—In conjunction with these widely spaced transverses, numerous longitudinal frames, preferably of bulb angle section (though Z's or channel sections may be adopted) run continuously fore and aft through the deep transverses (having slots in them to admit of the longitudinals passing through), and bear hard upon both shell and deck plating. These provide for the necessary support to the shell plating and deck plating

in between the transverses, and at the same time contribute enormously to the longitudinal strength of the structure. In conjunction with the shell and deck plating, these longitudinals provide the necessary longitudinal strength." *

The Isherwood system is nowadays largely employed in the construction of oil-tankers which require exceptional longitudinal strength. During the twelve months ended with the 30th June 1923, three-fourths of the tonnage constructed for carriage of oil in bulk adopted this system. As the forty-six vessels thus constructed were practically all the Isherwood vessels built during the year, it would seem that the popularity of the longitudinal ship is merely confined to the bulk oil carriers.

Another interesting kind of a full-scantling vessel is presented by the cantilever type which may be regarded as evolved from the self-trimming vessel which is very economical to run particularly with bulk cargoes as there are no trimming expenses and the full width of the deck area is available for deck cargoes.

The manufacturers of corrugated vessels—*i.e.*, ordinary steamers with two corrugations running along each side between bilge and water-line and extending from the turn of the bow to the turn of the quarter—claim that these slight rounded projections under water through their effect on the stream and wave action

* Thomas Walton "Steel Ships."

around and under the vessel, increase the efficiency of the vessel by over 20% as they save energy which is otherwise wasted in ships with plain sides.

Besides, there are vessels designed to meet the especial needs of various trades for which ordinary vessels cannot profitably cater even with reasonable constructional changes. We have, therefore, the tanker for carrying oil in bulk and the refrigerating ship for the carriage of frozen meat and perishable foodstuffs.

Ever since the primitive system of carrying oil in casks has been given up, it has been transported in tin cases or in bulk. As, however, tin cases take up space and mean extra cost of manufacture, transport in bulk is the most economical method as the oil can be run into the ship through pipes and pumped out at the port of discharge. This is how the ships of the Burma Oil Co. are loaded at Rangoon.* Small quantities of oil in bulk could, however, be carried by even the ordinary cargo vessels by utilising their water-ballast tanks for that purpose.

The great progress in the adoption of this method of transportation during recent years will be clear from the growth in the tonnage of oil carrying vessels

* The oil is brought through pipe lines from Yenangyaung to Rangoon where it is taken in bulk by the tanker awaiting. The Burma Oil Company owns some 300 miles of such pipe lines.

shown by the following particulars from the annual report of Lloyd's Register of Shipping.

Year.	Oil Tankers. Gross Tons.
1914	1,478,988.
1919	2,929,113.
1920	3,354,314.
1921	4,418,688.
1922	5,062,699.
1923	5,203,601.

The main advantage of an oil-tanker is that in addition to quick despatch it largely reduces the stevedoring charges as about 300 tons of oil could be loaded or unloaded in one hour; to handle the same quantity in barrels would at some ports take up a whole day.

In winter, however, particularly in cold climates the process of discharging oil has to be preceded by that of liquefying the frozen cargo by means of steam heaters, with which the tankers are equipped.

The refrigerator ships perform a double function: first they generate cold air and secondly they insulate it against outside hot air. Refrigeration is brought about by compressed air or gas and insulation by interposing between the refrigerated cargo and the ship's sides or decks a one-foot lining of charcoal or silicate cotton which keeps in the cold and keeps out the heat. 285 such vessels, with Lloyd's refrigerating machinery

certificate, providing approximately 60,000,000 cubic feet of insulated space, are to-day employed in the frozen meat trade carried on by Australia and Argentine with Europe. Some of the refrigerating vessels have a length of 470 feet and a capacity for 1,00,000 carcasses totalling about 10,000 tons d.w.

No treatment of the types of ships can be regarded as complete to-day if it did not refer in some detail to the question of the motor ship. It has long since past the experimental stage and has now arrived to stay. There are nearly 300 of such ships (of 2,000 gross tons and more) in daily use totalling between 1,500,000 and 2,000,000 tons dead-weight. Their relatively sudden rise into public favour is attributable to their economical running charges as will be seen from the following comparison, taken from the "Fair-play," between a coal-fired reciprocating steam engine with steam auxiliaries supplied from a donkey boiler and a Diesel* engine with electric auxiliaries supplied with current from the Diesel-driven generators.

The basis for the Diesel machinery is 0.45 lbs. of oil fuel per brake horse-power per hour for all purposes, and for the coal-fired steamer 1.9 lb. of coal on the same basis, or equivalent to between 1.6 and 1.7 lb. of coal per indicated horse-power hour. The result is that the all-in consumption in fuel oil

* Since the German engineer Dr. Rudolph Diesel obtained patents for his internal combustion oil engine in 1895, many new types known as semi-Diesel engines have also been manufactured.

of a Diesel ship is some one-quarter to one-fifth of the coal required by an equivalent steamship. This is an average figure covering expenditure of fuel when under way and in port. This means that, so long as the average price of suitable fuel oil is less than four times that of coal, the oil-engined ship will show a saving of fuel cost, and the amount of the saving will be proportional to the difference. Any motor ship trading on routes where oil is cheap will be able to show a very large balance in its favour under this heading.

The consumption of lubricating oil is the next point in order, which, with the Diesel plants, is from three to four times that with steam engines, because with the latter the working medium steam, except when in the superheated condition, acts itself as a lubricant. Moreover, with oil engines the quality of the lubricating oil has to be more carefully chosen.

As regards the personnel, the elimination of the firemen is an admitted advantage of considerable value somewhat difficult to translate into pounds, shillings and pence savings. A Diesel ship, however, requires more engineers than a steamship, and if the engine room and deck auxiliaries are electrically driven, electricians must also be carried. The reason for this is, that so far it has been usual to carry on ocean-going motor ships an ample number of engineers, in order that any overhauling which may be required can speedily be

effected on board, because not all ports have yet got the essential facilities for ordinary motor-ship repairs.

As regards the question of overhauling and repairing expenses, there is no reason whatever why the upkeep and repairs of a Diesel installation should be any more than are required for a steam plant, and experience so far goes to show that with age the advantage lies with the oil engine, depreciation only affecting minor items, such as exhaust valves and piston rings, instead of boilers.

It is not generally recognised that being unaffected by bad coal, no fires require to be cleaned, hot climates do not affect efficiency, hot stokeholds are non-existent and governing of the main engines in a sea-way is much "closer," permitting of a considerably greater percentage of full speed of revolution of the propeller being maintained, so that the motor ship is able to show year in and out, a higher average speed than an equivalent steamer. Again, a motor ship need only bunker once for the round voyage. Deviations from the routes of trade are thus avoided, the time lost in coaling is saved, and the expenses consequent upon the operation of fuelling are much reduced.

As regards the first costs, however, it must be admitted that about 10 % more capital expenditure would be required for a motor ship than for a steamship.

A tabular statement may now be given comparing a motor ship and a steam ship each of ap-

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proximately the same tonnage, taking the average cost of coal at £ 1-10-0 a ton and Diesel fuel at £ 4 a ton. For the coal a calorific value of 13,500 B. Th. U. is assumed and for the fuel oil 19,000 B. Th. U. per lb.

COMPARATIVE PARTICULARS.

Type of Propelling Machinery.	DIESEL ENGINES. 4 Cycle single-acting reversible crosshead Diesel electric driven Auxiliaries.	RECIPROCATING STEAM ENGINES. Triple expansion engines cylindrical boilers, Howden's forced draught, Superheat 50° Fah. Coal-fired boilers.
Total dead-weight in tons...	10,050	10,230
Freight earning cargo in tons	9,357	7,830
Radius of action in miles ...	10,500	10,500
Fuel consumption per brake horse-power hour, including auxiliaries in lb. ...	0.45	1.9
Fuel consumption per day in tons	12.1	51
Fuel consumption per month of 24 days sailing... ..	291	1,220

COMPARATIVE COSTS OF WORKING.

Provisions, total per month...	£ 160	£ 200
Wages, total per month ...	£ 400	£ 482
Fuel per month of 24 days sailing	£ 1,164 (£ 4 per ton)	£ 1,830 (£ 1/10/- a ton)
Cost of running for one year of 288 days sailing ...	£ 20,688	£ 30,144
(Addition of the three items preceding.)		
Tons of freight-earning cargo carried, assuming 9 round voyages per year, each of 32 days total sailing out and home	1,68,426 tons.	8,41,840 tons.
Cost per ton of cargo carried...	2s. 5d.	4s. 3d.

The figures given in this table can be taken as representative and show the good case that exists for the motor ship. It should be mentioned that the radius of action of the two ships is assumed to be equal. If full advantage is to be taken of the average motor trader, with fuel storage in the double bottoms, a much larger radius of action would be arranged for, in which case, of course, the extra cargo carried would be lessened but the reduced bunkering costs and consequential expenses would form the offset. The economy of the motor ship may be further illustrated by the fact that during the recent trade slump, no motor ship has been reported to be laid-up.

The various economies may be thus summarised :—

- (a) Economies of time due to loading of fuel simultaneously with stores and passengers. Time is also saved in the process of supplying oil to the steamer.
- (b) Economies of space as oil requires only 50 or 60 % of the space required by an equivalent amount of coal and may be stowed in places unsuitable for cargo thus releasing coal bunker and other space for earning freights; should however the space thus made available be used to carry more oil, the steaming

radius of the vessel is increased and time saved by reduction in the number of stops for bunkering. The tanks of large motor vessels will give a cruising radius of 25,000 miles, sufficient to go round the world.

Space is further economised in the motor vessel by the elimination of boilers, light and air shafts leading to the boiler room and the smoke funnels. This saving is estimated at about 30% of the space required for steam-engines.

- (c) Economies of weight by a reduction in the weight of the fuel and the engine. As regards fuel, the saving in weight may amount to about 75 % as the quantity of oil required is about $\frac{1}{4}$ of the coal taken on board. "A vessel of 2,500 to 3,500 tons displacement propelled by a steam engine of 1,100 or 1,200 indicated horse power would require 15 tons of coal per day while a Diesel engine would require only 4 tons of oil. If the vessel bunkered for 20 days, this would mean a saving of 220 tons."* As regards the

* Riegel "Merchant Vessels."

engine, it is calculated that the reduction in weight is about 100 tons.

The result of these economies of space and weight is that the total dead-weight capacity of the vessel is largely increased so that an extra cargo can be carried equal to about 15 per cent. of the displacement of the vessel. In the *Jutlandia*, which visited the Indian waters in 1921-22, with a displacement of 5,000 tons, a gain of 20 per cent. in freight and passenger space resulted from Diesel engines; in the *Zeelandia* of 10,000 displacement, a gain of 1,000 tons of cargo was obtained.

(d) Economies of cost in running the steamers whenever the cost of oil is less than four times cost of coal and in repairs as oil preserves the metal which otherwise deteriorates by contact with coal. Besides the cost of starting and hauling the fires of coal-burners is largely eliminated.

(e) Economies of labour by reducing the number of crew; (see p. 103).

These manifold advantages of oil fuel easily explain their popularity which is borne out by the following table giving the number and gross tonnage of

motor ships belonging to the various maritime countries of the world :—

Countries where Owned.	Motor Vessels.	
	No.	Tons.
British Empire.—		
Great Britain & Ireland ...	139	374,873
Australia & New Zealand ...	8	5,581
Canada	19	3,130
Other Dominions	17	5,373
America (United States).—		
Sea	97	139,786
Northern Lakes	5	5,200
Philippine Islands	4	3,179
Belgium ... ..	...	...
Brazil	2	3,852
Denmark	40	132,542
France	34	27,958
Germany	45	84,528
Greece	5	1,202
Holland	52	66,577
Italy	34	61,374
Japan	20	4,375
Norway	130	177,071
Spain	8	13,378
Sweden	103	173,697
Other Countries or Country not stated	62	37,455
Total ...	824	1,321,121

This table taken from an interesting article in the Fortnightly Review of September 1923 may be taken as authoritative as regards the relative position of the various countries owning motor vessels. As regards their number and tonnage, these figures do not tally with those given in the recently published Annual Report of the Lloyd's Register probably because the review article refers to motor vessels of 500 tons and

more. In any case to remove all possible doubt on the subject, the figures taken from Lloyd's Register Book for each year are reproduced below as, besides presenting an authoritative statement, they show the immense development that has occurred in this line since the last year of the Great War :—

Year ending July.	Motor Vessels.	
	No.	Gross Tons.
1914	297	234,287
1919	912	752,606
1920	1,178	955,810
1921	1,473	1,248,800
1922	1,620	1,542,160
1923	1,831	1,668,414

The largest vessel fitted with the Diesel engine to-day is the oil-tanker *Zoppot* of 9,932 gross tons, registered at Danzig.

It has been stated before that motor-ships are about 10 % more costly to buy than steam vessels ; but the higher cost price is more than set-off by the lower working expenses. It follows therefore that even if all the merchant vessels were motor-ships, the amount of money locked up in the shipping business would not much vary from the present figure.

The most remarkable fact about the shipping industry is that the amount of capital expenditure is relatively small in view of its great economic importance—money being required only for sea-vessels and not for sea roads.

Capital expenditure in shipping is only required in so far as the ships have to be purchased. Once the ship leaves a slip way, ways of voyage are provided, by nature, free of all costs. "The oceans provide the great highways of international trade, which, from port entrance to port entrance, are free and open to all who observe the international rules of the road at sea. Although ocean traffic follows certain rather definite routes, no nation, and of course no company, can convert any route into an exclusive right of way, such as a rail-road corporation possesses. A few short sections of some frequented routes of ocean traffic—the Panama, Suez, Corinth, and Kiel canals—are artificial, and subject to tolls, but their use is normally open to all upon equal terms. This simple but fundamental fact, that the sea is an open highway, causes ocean transportation to be governed by laws different from those controlling the railway service; and the main problems of transportation economics—competition, rates and fares, and government regulation—are radically affected by this difference between the railway and the ocean highway." *

* Johnson and Huebner "Principles of Ocean Transportation,"

From the point of view of capital, however, the principal result of this characteristic feature of the Merchant Marine is that the fixed capital investment in the shipping industry is less than in the allied branch of transport namely railways.* While the capital invested in railway is ten times as great in value as the annual output or gross receipt (earnings) the capital invested in the ships would present a smaller multiple of the annual receipts, and may, in some monopolised trades, almost equal the gross earnings; for instance the total capital invested in ships both passenger and cargo running along the Indian coast would amount, as stated below, to Rs. 16 crores if all the ships were new but would approximate or even be less than the total annual earnings, say Rs. 11 crores, if their present market price were taken.

Another noticeable feature of shipping economics, therefore, is that its fixed investment is relatively high in comparison with the gross earnings as against the manufacturing industries and the distributing trades in which the fixed capital forms only a small proportion of

* A general idea of the amount involved may be had from the fact that the rail-roads of England represent, according to Prof. Acworth, an immobilisation of some £ 800,000,000 of capital for some 22,000 miles of line maintained at an annual cost of £ 10,000,000. Before, however, the rail-roads could be built, heavy preliminary expenses have to be incurred in sunneys litigation and land acquisition amounting in the case of England be about £ 90,000,000 or £ 4,000 per mile. This huge expenditure is saved to the shipping industry because nature provides the sea routes,

the annual output. One of the results of this peculiar feature of transport economics is the frequent change the shipping industry experiences from financial success to financial failure. In times of depressed trade and consequent slackened traffic, the heavy capital change cannot be reduced nor can a large proportion of the operating expenses. Later, however when trade revives and traffic grows, the receipts increase without a corresponding increase in the operating expenses.* It is thus that shipping profits react very finely, and quickly to the prevailing state of the trade. This reaction explains why shipping is meant only for people with long patience and a longer purse. The profits of the industry are intermittent and the fat years must be taken with the lean ones, if the matter is to be reviewed in the proper manner.

Another result of the ocean highways being provided free to all by nature is that the amount of capital required to run a shipping company, *i.e.*, its working capital, is not so large as it might be in comparison with the running of railways which, according to Prof. Ripley, in the maintenance of way and structures alone, accounts for 20 % of the operating expenses and 15% of the total expenditure.

Thus all expenses incurred by a shipping company, once the ship is bought, are operating expenses only. There are no doubt the ports which provide

* This subject is discussed more fully under the Laws of Increasing and Diminishing Returns in Chapter I.

anchorage, berths, loading and discharging facilities, lights, pilots, etc., but as their administration is not directly involved in the working of a shipping company, it is not necessary to refer to them in great detail here. The subject of ports, however, will be found adequately discussed in a later chapter.

Capital required for the efficient working of the shipping industry, for the ships as also for their operation, is therefore, not large. The following statement points out that only sixteen crores and a half of rupees will be required for the "Indianisation" of all the services along the Indian coast.

A Statement of the estimated total cost of new Indian-owned vessels, necessary to reserve the passenger and cargo trade along the coast of India to vessels of the Indian Mercantile Marine.

		Rs.	a.	p.
12	Passenger steamers for traffic in the Bay of Bengal at an average price of Rs. 15 lakhs each	1,80,00,000	0	0
3	Passenger steamers between Karachi and Bombay at Rs. 15 lakhs each ...	45,00,000	0	0
20	Passenger steamers in addition to ferry boats for the Karachi-Bombay-Konkan coast run (various sizes) ...	1,00,00,000	0	0
100	Cargo steamers of an average size of 7,500 tons d. w. at Rs. 11,25,000 each.	11,25,00,000	0	0
	River passenger services	1,00,00,000	0	0
	Barges, launches, tenders, tugs, tackles in various small ports	1,00,00,000	0	0
	Total Rupees...	16,50,00,000	0	0

It will be seen that the total capital outlay required for the complete Indianisation of the coastal traffic of India by the employment of all new ships is only Rs. 16,50,00,000, *i.e.*, approximately one-tenth

the amount, Rs. 150 crores, recently provided, by the Government of India, for the mere development of Indian Railways. Besides, even this cost will be substantially reduced if cargo tonnage not more than five years old is purchased to meet the coastal requirements of India.

The smallness of the capital resources required by the shipping industry is also reflected in the value of the ocean shipping of the world. The steam-ships by which the communications of the world were maintained and its products and manufactures exchanged, including passenger steamers, amounted in 1914 to about 8000 in number and were distributed before the Great War under the following flags :

Principal sea tonnage in midsummer 1914

1600 G. T. & UPWARDS.

Flag.					No.	G. T.
British	...	...	...	(1)	4,174	18,197,000
German	...	...	...	(2)	713	3,799,000
U. S. A. (Sea & Philippines)	...	...	...	(3)	513	2,216,000
French	...	...	...	(4)	357	1,602,000
Japanese	...	...	...	(5)	429	1,496,000
Italian	...	...	...	(6)	355	1,310,000
Dutch	...	...	...	(7)	263	1,285,000
Norwegian	...	...	...	(8)	323	1,087,000
Austrian	...	...	...	(9)	230	927,000
Greek	...	...	...	(10)	262	771,000
Spanish	...	...	...	(11)	229	664,000
Russian	...	...	...	(12)	149	531,000
Swedish	...	...	...	(13)	183	526,000
Danish	...	...	...	(14)	156	466,000
Belgian	...	...	...	(15)	66	210,000
Portuguese	...	...	...	(16)	13	58,000
					8,445	35,145,000

NOTE.—While for general purposes vessels of 1600 G. T. or over may be taken as ocean-going vessels, a certain number of vessels in excess of that tonnage was invariably employed on local trade. The number of actual ocean-going vessels would, therefore, not greatly exceed 8,000; their value, according to Mr. G. A. Salter, Chairman of the Allied Maritime Transport Executive during the war, not exceeding £ 300,000,000 or Rs. 450 crores.*

It will be noticed that the foregoing table indicates the relative position of each country in respect of ocean-going tonnage before the war. Many changes have however taken place during and since the war and the shipping strength of various countries to-day in respect of all tonnage above 100 tons gross is well brought out by the following table and remarks emanating from the Lloyd's Register Office :—

* By way of contrast it may be stated that the cost of the rolling stock and miscellaneous property belonging to the English Railways alone amounts to £ 200,000,000. Add to this £ 800,000,000, the cost of the rail-roads and we get the total of £ 1,000,000,000 or Rs. 1,500 crores as representing the actual capital cost for the 22,000 miles of English Railways. On the other hand the 37,000 miles of Indian Railways have cost in rail-roads, rolling stock and miscellaneous property some 656 crores of rupees, according to the Railway Administration Report for 1921-1922, since which date the proposal to spend 150 crores of rupees on new capital railway expenditure, during the next five years, has been accepted by the Indian Legislature.

Sea-going steel and iron steamers and motor vessels of 100 gross tons and over, owned by the principal maritime countries.

Country.		June 1914. Tons gross.	June 1923. Tons gross.	Difference between 1923 & 1914 Tons gross.
Great Britain & Ireland	(1)	18,877,000	19,077,000	+ 200,000
British Dominions ...		1,407,000	2,219,000	+ 812,000
America (United States)	(2)	1,837,000	12,416,000	+ 10,579,000
Japan ...	(3)	1,642,000	3,402,000	+ 1,760,000
France ...	(4)	1,918,000	3,265,000	+ 1,347,000
Italy ...	(5)	1,428,000	2,788,000	+ 1,360,000
Holland ...	(6)	1,471,000	2,606,000	+ 1,135,000
Germany ...	(7)	5,098,000	2,496,000	- 2,602,000
Norway ...	(8)	1,923,000	2,299,000	+ 376,000
Spain ...	(9)	883,000	1,169,000	+ 286,000
Sweden ...	(10)	992,000	1,092,000	+ 100,000
Denmark ...	(11)	768,000	920,000	+ 152,000
Greece ...	(12)	820,000	743,000	- 77,000
Belgium ...	(13)	341,000	600,000	+ 259,000
Austria-Hungary ...		1,052,000	...	...
Other Countries ...		2,057,000	2,847,000	+ 790,000
Total ...		42,514,000	57,939,000	15,425,000

It will be seen that amongst the principal countries apart from Germany, Greece is the only one which still shows a reduction in the tonnage now owned as compared with 1914.

The sea-going tonnage of the United States has increased by over $10\frac{1}{2}$ million tons. The other countries in which the largest increases are recorded are: Japan, 1,760,000 tons; Italy, 1,360,000 tons; France, 1,347,000 tons; and Holland, 1,135,000 tons. Taken together the Scandinavian countries—Norway, Sweden & Denmark—show an increase as compared with 1914 of 628,000 tons.

In 1914 the United Kingdom owned nearly 44½ per cent. of the world's sea-going steel and iron steam tonnage; its present tonnage is just under 33%. The United States occupy, now, the second place with 12,416,000 tons—equal to 21·4 per cent. The other leading countries are: Japan, 3,402,000 tons; France, 3,265,000 tons; Italy, 2,788,000 tons; and Holland, 2,606,000 tons.

Notwithstanding recent increases in the tonnage owned in Germany, the above table shows the change which has taken place in the maritime position of that country, where the tonnage now owned is some 2,602,000 tons less than in 1914.

Obviously the above figures do not take into consideration the question of the efficiency of the various Merchant Navies, as in addition to such factors as size, age, type and speed of the vessels, other circumstances, which do not lend themselves to a statistical analysis, would have to be taken into account.

Reverting, however, to the topic of shipping capital, the conclusion derived from a study of the Indian coastal and the world's ocean tonnage, both cargo and passenger, is further supported by a scrutiny of the cargo tonnage alone and of all sizes. For this purpose let us take the cargo steamers of Great Britain which owns a large proportion of the requisite tonnage. An analysis of the British Cargo-Steamer Companies in the year 1922

also indicates the moderate character of the capital required in the shipping industry.

No. of Companies.	Paid up Capital.
	£
19	100,000 and under.
34	100,000 — 500,000.
5	500,000 — 1,000,000.
6	1,000,000 — 5,000,000.

It follows therefore that the number of steamers belonging to the different companies should also be limited. Out of the 64 companies mentioned above, only ten companies own more than ten steamers each—of these only three have more than twenty steamers, the first having fifty seven steamers, the second thirty and the third twenty four steamers.

Of the companies owning less than ten ships, nine own steamers varying from nine to five each; twenty seven companies have only two, three or four steamers each and as many as eighteen companies have each one steamer only.

The one-ship company is an important feature of the shipping industry and new formations of that nature are usually the rule. Any one with a knowledge of the business and in a position to raise about £ 50,000 can become, if luck favours him, a successful ship-owner theoretically competing on equal terms with the richest shipping magnate in the land.

CHAPTER III.

THE CHARTERING BUSINESS AND THE FREIGHT MARKET.

We have so far dealt with the subject of the steamers from the point of view of ownership which necessitates the locking up of a certain amount of capital. The business of chartering, however, provides a method by which steamers may be operated without being owned.* This is particularly necessary when it is desirable to find out by experiments the real nature of a certain trade. In such cases it is essential to make experiments before sinking a large sum of money in buying steamers. Under the circumstances it is usual to hire steamers on time charter basis. The hire money is paid monthly on the dead-weight tons of the steamer. It would, therefore, be uneconomical either to detain the steamer too long at a port or to sail the steamer without her full weight of cargo. For such experimental purposes, therefore, it is safer to operate a small steamer which reduces the amount of loss if incurred. For permanent use, however, from the shipowning company's point of view there is nothing to compare with the economies of a large-sized steamer. As a rule, the daily hire money of a 5000-ton steamer will approximately equal the daily constant costs of a

* It may be pointed out as a matter of interest that, in the allied branch of transport by railway, this division of functions has never been known to operate in normal cases though allowed for in early railway legislation.

7000-ton steamer including depreciation and interest on capital invested. It follows, therefore, that other things being equal a 7000-ton time chartered steamer will show, when compared with a similar owned steamer, a loss of the hire money for 2000-tons d. w. One may therefore conclude that though for experimental purposes chartered vessels have their uses it is only large steamers operated under ownership that will pay their way if a regular line is to be run. Some trades are, however, owing to various special features,—such as their seasonal character or want of return cargo, which prevents the establishment of frequent regular sailings—wholly catered for by steamers chartered from the “tramp” tonnage of the world. It would, therefore, be desirable to deal with the subject a little more exhaustively.

The tonnage of the world is divisible into two main classes—the liner and the tramp. The liner providing a regular service along specified trade routes, is the successor of the ships belonging to the chartered companies having a monopoly of certain trades; for example the East India Company owned a splendid fleet of vessels ranging from 1000 to 1500 tons capable of regularly meeting all their requirements for cargo and mail services. The efficiency of their vessels was such a characteristic feature that the ships of the liner class were, for years, known as Indiamen, a name at first applied only to the vessels belonging to the Company. The other trades of the world were,

however, served by smaller sailing vessels of about 500 to 700 tons demanding less expenditure than the larger vessels and not bound to run along specified routes. Useful as these free traders were in the early stages, their importance rose when, during the second half of the last century, the trades of the world became open to all who cared to participate in them. These Free Traders are the precursors of the modern tramps which account for over 50 per cent * of the present tonnage of the world.

A tramp has been described as "a handy sized vessel, capable of visiting a large number of ports and of being employed in many different trades ; thus she is ready to go where there is money to be made." † It follows therefore that the difference between a liner and a tramp is based upon the method of working the ship and not upon any peculiarity in the ship as such. Regular runs make a liner, promiscuous calls at profitable ports earn the designation, tramp.

The full nature of the work of a tramp will be readily seen from the following table appearing in Prof. Kirkaldy's "British Shipping." The last column has been compiled from material provided in the book.

* Estimates vary, but expert witnesses before important Committees and Commissions in Great Britain have given the proportion of tramp tonnage as varying from 50 to 80 per cent of the shipping of the world.

† Kirkaldy and Evans "The History and Economics of Transport."

	Left.	Arrived.		Dist. in nautical miles.	Nature of work done at port in column 2.
May 7	London ...	Fremantle ...	June 18	10,919	Loaded general cargo.
July 6	Fremantle ...	Bunbury ...	July 7	118	Left in ballast.
„ 11	Bunbury ...	Flinders Bay..	„ 12	122	Loaded Jarrah Wood.
„ 21	Flinders Bay.	Melbourne ...	„ 27	1,500	„ „ „
„ 31	Melbourne ..	Sydney ...	Aug. 2	579	Loaded Harvesters.
Aug. 8	Sydney ...	Bahia Blanca.	Sept. 3	6,916	Coaling.
Sept. 13	Bahia Blanca.	Buenos Ayres	„ 15	551	Discharged Australian cargo.
Oct. 12	Buenos Ayres.	Durban ...	Oct. 28	4,466	Loaded grain.
„ 31	Durban ...	Mauritius ...	Nov. 5	1,553	Coaling.
Novr. 7	Mauritius ...	Calcutta ...	„ 18	3,231	Discharged grain.
Decr. 9	Calcutta ...	Colombo ...	Dec. 14	1,260	Discharged grain ; loaded jute and seed.
„ 15	Colombo ...	Port Said ...	„ 28	3,402	Coaling.
„ 29	Port Said ..	Gibraltar ...	Jan. 7	1,921	„
Jan. 8	Gibraltar ...	Boston ...	„ 22	3,138	„
Feb. 3	Boston ..	New York ...	Feb. 4	295	Discharged jute and seed.
Mar. 2	New York ...	St. Vincent ...	Mar. 14	2,933	Discharged jute; loaded general cargo.
„ 15	St. Vincent ...	Capetown ...	„ 30	3,959	Coaling.
Apl. 2	Capetown ...	Fremantle ...	Apl. 21	4,806	„
„ 26	Fremantle ...	Adelaide ...	May 2	1,420	} Discharged Ameri- can general cargo.
May 4	Adelaide ...	Melbourne ...	„ 6	515	
„ 11	Melbourne ...	Sydney ...	„ 13	582	
„ 16	Sydney ...	Brisbane ...	„ 18	496	} Left in ballast.
„ 23	Brisbane ...	Port Pirie ...	„ 29	1,620	
June 6	Port Pirie ...	Brisbane ...	June 13	1,627	Loaded ore.
„ 22	Brisbane ...	Sydney ...	„ 24	517	} Loaded general cargo.
„ 29	Sydney ...	Melbourne ...	July 2	575	
July 6	Melbourne ...	Albany ...	„ 12	1,351	} Coaling.
„ 12	Albany ...	Durban ...	Aug. 1	4,569	
Aug. 2	Durban ...	Las Palmas...	„ 24	5,231	„
„ 26	Las Palmas...	Dunkirk ...	Sept. 1	1,657	„
Sept. 8	Dunkirk ...	London ...	„ 8	104	...
				71,923	

Such being the manifold activities of the tramp, it follows that its successful management would require a live man better informed and more alert than his neighbours. The qualities that make for success in this line of business are well summed up in the statement that "The manager of a modern tramp steamer not only needs to know the main facts about steam, fuel, construction materials, and the many items of knowledge which are necessary if he is to keep the vehicle he employs abreast of the times; but he must know the exporting and importing centres of the world and the commodities available at or for each. He must keep his finger on the pulse of many markets, know when the crops have failed in one part of the world, and have been above the average in others. He must be watchful and on the alert, so that his ship or ships may be where they were wanted at a given moment and not side-tracked when there is a boom with consequent high freights. The successful tramp owner must be a many-sided man, knowing just a little more than his average competitor." *

It has been said before that the tramps account for over half of the existing tonnage. It is an equally remarkable fact that Great Britain owns a very large proportion, may be even 90 per cent of the total tramp tonnage. Ships of this class are, when required, chartered either for a definite period of time or for a certain number of voyages.

* Kirkaldy and Evans "The History and Economics of Transport."

Charters are of four principal kinds :—

The *Bare-boat form* under which, as the name implies, the owner hires out the bare steamer to the charterer who pays all the expenses of staffing, insuring, running and repairing the steamer.

The *Time charter* provides a contractible arrangement between the owner and the charterer under which the former and the latter respectively pay the constant and the variable costs of running the steamer. Its main terms are clearly brought out in the following clauses taken from an actual time charter party :—

That the owners shall provide and pay for all the provisions and wages, and for the insurance of the steamer and for all deck and engine room stores and maintain her in a thoroughly efficient state in hull and machinery for and during the service.

Owners to provide one winchman per hatch, if further winchmen are required or if the stevedores will not work with men from the crew at the winches charterers to provide and pay winchmen from land.

That the charterers shall provide and pay for all the coal, fuel, water for boilers, port charges pilotages (whether compulsory or not), canal steersmen, lights, tug-assistance consulages (except consular shipping and discharging fees of the Captain, officers, engineer, firemen and crew) canal, dock and other dues and charges (also to pay all dock, harbour

and tonnage dues at the port of delivery and re-delivery unless incurred through cargo carried before delivery or after re-delivery), agencies, commissions, expenses of loading, trimming, stowing, unloading, weighing, tallying and delivery of cargo, surveys on hatches and protests (if relating to cargo) and all other charges and expenses whatsoever except those above stated. ,

That the charterers at the port of delivery and the owners at the port of re-delivery shall take over and pay for all coal remaining in steamer's bunkers at the current price of the respective ports.

That the said charterers shall pay as hire for the said steamer 5s. 1d. (five shillings and one penny) per ton on total dead-weight as aforementioned, per calendar month commencing from the time the steamer is placed at the disposal of charterers and *pro rata* for any fractional part of a month (the days to be taken as fractions of a month of 30 days) until her re-delivery to owners as herein stipulated.

That the payment of the hire shall be made as follows : In London in cash without discount, monthly in advance.

The *net form* charter is a modification of the time charter form. Under it, not the period of voyages but the number of voyages is defined ; the operating expenses including fuel are paid by the owners, the voyage and cargo expenses by the charterers.

The *gross form* of charter party is an antithesis to the bare boat form. Unlike the latter, in which the greatest number of obligations rest upon the charterers, under the gross form the owners pay all the usual expenses incident to the voyage from the time the ship is berthed to the time the last ton of cargo is discharged. The charterer has to pay only extraordinary charges such as those incurred on very heavy packages, or night work or holiday work.

Upon these four forms are based all the charter parties current in the world of commerce. Varied as are the forms, prevalent, whether evolved, by organisations or exchanges, such as the Baltic time form, the Produce Exchange berth form, or, by private firms such as Rallis or Grahams, the basic principles are borrowed from one of the four forms mentioned above. It sometimes even happens that a trade utilises various types of charter party according to its special requirements. Thus in the coal trade, while the South American coal charters are based upon the net form, the West India coal form is almost wholly gross in form. The English Chamber of Shipping has separate forms for Welsh coal and East Coast coal.

The dead-weight charter party form, printed below, under which a large percentage of the carrying trade between the West Coast of India and the United Kingdom and Continent of Europe is handled, is an example of the gross form modified to suit the local conditions at the Western Indian ports.

SCINDIA STEAM NAV.
CO., LTD., BOMBAY.
Telegrams : "Jalanath."

[Dead-weight Charter.]

CHARTER PARTY.

S.S. _____
LONDON _____ 192 .

It is this day mutually agreed between MESSRS. SCINDIA STEAM NAVIGATION CO., LTD., of BOMBAY, CHARTERERS, of the one part, and the OWNERS of the good Steamship called the _____ and classed 100 A-1 or a class equal to it, of the measurement of _____ Tons nett Register or thereabouts, now _____, of the other part.

1. That the said Steamer, being tight, staunch and strong, and in every way fitted for the voyage, shall proceed to Bombay and/or Marmagao and/or Karachi, in order as determined by Charterers, and load in customary manner from the Charterers or their Agents, always afloat, a full and complete cargo of Wheat and/or Seeds and/or Ore and/or other Lawful Merchandise (*Oils, Liquids and Asafoetida being excluded*), not exceeding what she can reasonably, stow and carry over and above her tackle, apparel provisions, furniture, and coals for Steamer's use, the entire dead-weight capacity of the Steamer, excluding _____ tons bunker coal, and also the entire cubic capacity of the Steamer to be placed at the Charterers' disposal, which Owners undertake will be about _____ tons dead-weight for cargo and not less than _____ cubic feet space for cargo, and being so loaded shall with consent of Charterers therewith proceed without delay, *via* Suez Canal, to Trieste, Venice, Genoa, Marseilles, Avonmouth, Portishead, Sharpness, Manchester, Garston, Birkenhead, Belfast, Barrow, Fleetwood, Liverpool, Mostyn Deep, Glasgow, Newport, Cardiff, Maryport, London, Hull, Leith, Burntisland, Dundee, Aberdeen,

Middlesbrough, West Hartlepool, Antwerp,
Dunkirk, Boulogne, Dieppe, Havre, Rotterdam,
Amsterdam, Hamburg, Bremerhaven,

as ordered on signing Bills of Lading, or at Port Said
at Charterers' option (said orders if at Port Said to be
given on Steamer's arrival there; the Captain telegraph-
ing to "Jalanath, London," his arrival homeward at
Suez), and deliver the same in any safe Dock or Berth
the said Charterers or their Agents may appoint,
agreeably to Bills of Lading on being paid Freight (in
full of all Port Charges, Pilotage, primage, steamer
cranes, winches, and cost of handling cargo as customary
in an ordinary rate per scale ton charter)
at per ton of 20 cwt. or 1016 kilos. nett
weight delivered if ordered from one port to one port

at per ton of 20 cwt. or 1016 kilos nett
weight delivered if ordered from one port to two ports

at per ton of 20 cwt. or 1016 kilos. nett
weight delivered if ordered from two ports to one port

at per ton of 20 cwt. or 1016 kilos. nett
weight delivered if ordered from two ports to two
ports

the Charterers undertaking to provide such a cargo as
will load the Steamer down to her loadline as authorised
at time of loading, failing which the Captain and
Charterers to agree from her draft how much further
weight would put her down to her authorised loadline,
and freight to be paid on this quantity in addition to the
quantity nett delivered.

2. If a West Coast United Kingdom port be
combined with an East Coast United Kingdom port,

or if a Continental port north of Amsterdam be combined with a West Coast United Kingdom port, £50 extra, except when the last port of discharge is Newport or Cardiff.

3. If an Adriatic or Mediterranean port be combined with any other port, the Adriatic or Mediterranean port shall be the first port of discharge. If ordered to Liverpool, Master portorage to be done by Charterers or their nominees.

4. The Freight to be paid without discount on unloading and right delivery of the cargo if discharged in the United Kingdom in cash, and if on the Continent by approved Demand Bank Bills on London or in cash at current rate of exchange of such Bills.

5. The Master to sign clean Eastern Trade Bills of Lading, as presented for the whole or any portion of the Cargo (provided that the Cargo is shipped in good order), at any rate of freight as required by Charterers or their Agents, without prejudice to this Charter-Party; but in the event of such Bills of Lading aggregating less or more than chartered freight the difference is to be paid to the Master in cash, less $1\frac{1}{2}$ per cent at the current rate for Banker's Demand Bills on London or by the Master by demand draft on Owners against payment of freight, and the final adjustment is to be made in London on the nett weight delivered, ascertained after completion of discharge. RALLI BROS.' and L. DREYFUS AND CO.'S Forms of B/Lading to be accepted for any cargo shipped by them.

6. The Owners of the Steamer to have an absolute lien on all cargo shipped for all freight, dead freight, demurrage, difference of freight and other charges payable by the Charterers or the Owners of the Cargo, but as to Cargo (not the Charterers') shipped under the Charterers' re-lets such lien to extend only to freight according to Bills of Lading, Charterers remaining responsible for any difference.

7. Charterers or their Agents to have option of underletting the whole or part of the Steamer, they remaining responsible for fulfilment of Charter.

8. _____ whether working days, according to the custom at the port of loading (Sundays and holidays according to the Bombay/Marmagao/Karachi Chamber of Commerce list excepted) are to be allowed the said Charterers or their Agents (if the Steamer be not sooner despatched) for loading the said Steamer. Lay Days to commence 24 hours (Sundays, holidays, and non-working days excepted) from the time written notice by the Master that the Steamer is clear of inward cargo and ready to load has been handed to the Charterers or their Agents. Provided that if a berth in dock or at the wharf be not immediately available, lay days shall not commence until 48 hours (Sundays, holidays, and non-working days excepted) after expiry of said notice. Any time lost through riots, strikes, lock-outs, civil commotions, labour disputes, or scarcity of labour owing to epidemics, or through accidents, obstructions, breaches or delays on railways, in harbours, at or in connection with wharves or other loading places, or by reason of floods, atmospheric disturbances, or any other cause or hindrance beyond the control of the Charterer, is not to be computed as part of the loading time, unless vessel already on demurrage.

9. Ten days on demurrage over and above the said lay days to be allowed to the Charterers at £ _____ per day, or portions of days, *pro rata*, to be paid by them to the Master or Agents day by day in cash, at the expiration of which Steamer may sail full or not full, Charterers paying dead freight at above rate on dead-weight not used. Steamer to pay £ _____ despatch money for each running day saved.

10. All goods to be brought to and taken from alongside at Merchants' risk and expense, and according to the custom of the port for Steamers.

11. If Steamer load at more than one port, time occupied between ports not to count, and a further twenty-four hours' notice of readiness to be given at each subsequent port.

12. No Cargo whatever to be taken on board the Steamer without the written consent of Charterers or their Agents.

13. Lighterage on the Continent, if any be incurred to enable the Steamer to enter port of discharge by the first tide after her arrival and be always afloat, to be at Merchant's risk and expense, any custom of the port to the contrary notwithstanding.

14. Should the Steamer carry any Creosoted Sleepers or Petroleum outwards, she is to be fumigated to the satisfaction of the Charterers' Agents, and, if required, a satisfactory Survey Report from Lloyd's, or other recognised Surveyor to be furnished by the Captain to Charterers or their Agents before the Steamer commences to load. All mats and requisite dunnage to be provided by the Steamer.

15. Charterers or their Agents have the option of naming the Stevedore for the loading of the vessel at the usual charges paid by Owners for any recognised first-class Stevedore, subject to the Captain's approval and direction as regards the stowage of cargo, and also for discharging. Steamer to work night and day, and on Sundays and on holidays if required by Charterers, they paying extra expenses.

16. Lay days at Charterers' or their Agents' option not to commence before the and Charterers or their Agents to have the option of cancelling this Agreement should the vessel not be in a seaworthy condition, free of inward cargo, also entered outwards at the Custom House, and ready to load cargo in all holds, and notice to that effect given by 4 p. m. on the

17. The Steamer is at liberty to call at any port or ports in any order, to sail without pilots, to tow and assist vessels in distress, and to deviate for the purpose of saving life or property.

18. It is hereby agreed that insertion of the following clause be allowed on all Bills of Lading for cargo which may be shipped in the Steamer:—"The number of packages signed for in the Bills of Lading to be binding on Steamer and Owners, unless error or fraud be proved, and any excess of shippers' marks to be delivered."

19. In the event of any question of General Average arising, the same to be settled in England according to the **York-Antwerp Rules of 1890**.

20. Charterer's liability to cease on vessel being loaded.

21. It is agreed that the following exceptions and conditions shall apply to this contract :—

The Act of God, perils of the sea, fire on board, in hulk or craft, or on shore, barratry of the Master and Crew, enemies, pirates and thieves, arrests and restraints of Princes, Rulers, and people, collisions, strandings and other accidents of navigation excepted, even when occasioned by negligence, default, or error in judgment of the Pilot, Master, Mariners, or other servants of the Ship-owners. Steamer not answerable for any loss or damage arising from explosion, bursting of boilers, breakages of shaft, or any latent defect in the machinery or hull not resulting from want of due diligence by the Owners of the Steamer or any of them, or by the Steamer's husband or manager.

22. If Buffalo Horns, Hides, Skins, and/or Sinews be shipped, they must be dry and free from flesh and bone, and if required by the Captain, a Certificate to this effect from a certified Surveyor, vised by the Consul of the nationality of the port to which the Steamer is proceeding, is to be sent on board with such Cargo.

23. If Ore be shipped, it must be either stowed in separate holds from other Cargo, or separated from same by wooden dunnage sufficient to prevent any contact between the bags and Ore, at Steamer's expense, and be discharged by the Steamer with all customary despatch, where, and as directed by the Consignees, alongside any wharf or dock.

24. Penalty for non-performance of this agreement to be proved damages, not exceeding estimated amount of freight.

25. Steamer to be consigned to Charterers' Agents at loading ports, paying them $1\frac{1}{2}$ per cent commission on estimated freight, dead freight and demurrage, and six annas per ton brokerage on estimated number of scale tons laden, payable at loading port, and, if at Marmagao, paying an additional fee of £10 10s. for attending to Steamer's business. Steamer to be consigned at port or ports of discharge to Charterers' Agents, paying usual commission and fee for collecting freight and attending to Steamer's business.

26. Nothing in this Charter shall relieve the Owner of any liability which would ordinarily be his if this Charter were at a rate per scale ton instead of on a lump sum or dead-weight basis.

27. Any dispute that may arise under this Charter to be settled by arbitration, each party appointing an Arbitrator, and should they be unable to agree, the decision of an Umpire selected by them to be final. The Arbitrators and Umpire all to be Commercial men and resident in London, and the arbitration to take place there. This submission may be made a rule of the High Court of Justice in England by either party.

28. Charterers have the option of discharging and/or loading part Cargo at Suez and/or Port Said, paying any extra expenses thereby incurred.

29. The Owners shall keep the Charterers fully advised of the Steamer's movements, and the Captain shall telegraph to "Jalanath, Bombay," the name of the Steamer on her departure from the last Port of Call on the way to India.

Signed this
Owners of S.S.

day of

192 .

Charterers of S.S.

This charter party form has been evolved to meet the peculiar requirements of the shipments from Bombay. Cargo for shipment from Bombay and Karachi is booked according to the Chamber of Commerce tonnage scales in force at these places, baled and cased goods being booked per ton of 40 c. ft. measurement and bag cargo being booked per ton of a varying number of cwts. according to the nature of the cargo: cotton seed 13 cwts., linseed 16 cwts., wheat 18 cwts., etc. It was formerly customary to charter steamers on scale basis, to load at Bombay and Karachi; but this basis did not suit the ordinary ship-owner who did not understand what it meant, and had no means of calculating what freight the steamer could probably earn, unless the charterer could guarantee what the cargo would consist of. But it did not suit either the charterers or the shippers, as a rule, to give guarantees of cargo as it hampered their operations. Consequently the scale basis of chartering fell into disuse and the system introduced was to charter on lump sum basis, that is to say, a lump sum freight was paid to the owners, the latter guaranteeing certain dead-weight and cubic capacity. This method of chartering, however, proved unsatisfactory from the charterers point of view, as owners generally overestimated the capacity of their steamers in order to get a larger lump sum. In practice, it led to numerous disputes arising from the difficulty of proving a steamer's actual capacity. The present system by which owners are only paid on the actual quantity of cargo weighed out at destination is far more satisfactory

for the charterers, and it is at the same time quite fair to the owners.

The steamer is chartered on "dead-weight basis" which amounts to its being chartered on "voyage basis" to load at Bombay and/or Karachi and/or Marmagoa for various optional ports in U. K. Continent at a certain rate per ton of 20 cwts. for all descriptions of cargo, net weight delivered at destination, owners undertaking to place at charterers disposal a certain specified dead-weight cargo capacity and cubic feet space. The charterers on the other hand guarantee the owners that they will provide such a cargo as will load steamer down to the maximum draft allowed, paying dead-freight if they fail to do so.

To ensure the steamer being loaded down to the draft required, it is usually necessary to ship a certain quantity of manganese ore, the proportion of course varying according to the steamer and according to the description and assortment of the remainder of the cargo to be shipped. Steamers vary as regards the relative dead-weight and cubic capacity; therefore accurate knowledge of the space occupied by various descriptions of cargo is necessary and care has to be taken that the proportion of ore is regulated accordingly, the usual aim and object being to provide such a cargo as will load steamers down to the maximum draft permitted and at the same time fill up the available space.

The steamers are chartered on "voyage basis" for the voyage India to U. K. Continent only, which means that the owners of the steamer have to bear all running expenses of steamer, wages of crew, bunker coal, etc., also cost of loading and discharging, claims for shortage of cargo, etc. It is, therefore, merely a question of adjustment between the amount payable according to charter party on dead-weight basis, and the amount of freight payable by the shippers according to the rates at which the various cargoes are booked on scale basis, the balance providing profit or loss, as the case may be, for the charterer.

A feature of particular interest in connection with the freight market of Bombay is the predominance therein of the Indian element from the very early days. Ever since "Ottia Mottia"—trade soubriquets for Messrs. Ottamchand and Motichand—squatted on their mats in Elphinstone Circle, Circa 1850, the citizens of Porbander in Kathiawar have been playing a prominent part in all activities connected with shipping on the western coast of India. Of the various Indian firms that have conducted freight business in the past, particular mention may be made of Messrs. Nathoo Soonderjee & Co., and of Messrs. Soonderdas Dharamsey & Co. But they were all put in the shade by the emergence towards the end of the last century of Messrs. Chhagandas & Co. whose senior partner, the late Mr. Devkaran Nanjee was, in his time, the doyen of the freight market of Bombay.

It is said that it was he who started the modern method of booking in advance freight or tonnage, as the case may be, to meet the probable requirements of the freight market. To him is also ascribed the introduction of the method of booking cargo ahead for a steamer by her class, 100 A.-1, as against the earlier system under which the cargo was booked by the name of the particular steamer then in berth in the docks.

The importance of the Indian element in the freight market of those days may be gauged by the fact that the quotations of freight went up or down by 1s.-3d., that is, by 1/16th of a £/- on the analogy of 16 annas to the Rupee (1s.-3d. is, it will be seen, the 16th part of £1/-)—the usual Indian method of quoting rates. The freights would thus stand at 30s., 31s.-3d., 32s.-6d., 33s.-9d. and 35s. as against the present day rise by 3d. as a rule. The freight requirements of the Bombay market are to-day met by the regular liner companies, supplemented by the dead-weight chartering business of Messrs. Turner, Morrison & Co., Messrs. Graham & Co. and the Scindia Steam Navigation Co., Ltd.

Bombay being a free port, *i.e.*, untrammelled by any Conference restrictions, her freight market provides useful material for a study of various interesting points bearing upon the fixing of freight rates by the operation, in any open market, of the economic laws of demand and supply. The rates for general cargo from Bombay to U. K./Continent as

also the rates on coal from Cardiff to Bombay are, owing to their being fixed in an open market, in a way representative or perhaps illustrative of the tendencies prevailing in the freight markets of the world. To facilitate a proper grasp of the subject the subjoined chart has been prepared from material derived from the annual freight reports * published by Messrs. Angiers Brothers since 1870. It is hoped that the freight and trade movements would thus be more thoroughly understood. For the sake of convenience, the freight rates for alternate years only are charted ; those for the odd years, however, with few exceptions, share the indications of the chart.

The Chart gives *facts* of Bombay freights, inwards and outwards, shows *probabilities* of Indian freights and indicates, *tendencies* in World freights. The graphs also present a rough *indication* of the prices of tonnage and the rates of time charter as these are directly controlled by the freight market, rising with high freights and falling in days of depressed trade. They also present a faint *outline* of the trade conditions in India and abroad.

The graph as a whole further points out that, during the period covered by it, the freights have been always falling unless interrupted by war or spurts of commercial activity—a striking illustration of the advancement of science lowering the costs of the essentials of life by increasing the size and speed of the merchant vessels of the world.

* Extracts from the reports are, where necessary, given in full in the body of the book.

Opening under the shadow of a great European War and closing under the economic strain that followed a greater World War, the chart records the freight history of the last fifty-three years beginning with the year 1870 A. D. The Suez Canal had been opened the year previous, cutting out henceforth the sailing vessel which had so long monopolised the Eastern trades. The steaming distance was, moreover, reduced by 4,500 miles in the case of the voyage from London to Bombay and by 3,000 miles on the London to Yokohama run. A cargo vessel steaming say 240 miles a day would thus save about 18 days in the former and about 16 days in the latter voyage. What this saving means in terms of money will be realised after studying the chapter on shipping expenditure.

Starting at fairly high figures in 1870 when steamers from Cardiff to Indian ports *via* Suez Canal and back earned approximately 90 shillings per round voyage, tempting to Bombay even the *Great Eastern*,* the record-ship of those days, the freights progressively declined during the years that followed, particularly in the Eastern trades referred to, in those

* Built in 1858 the *Great Eastern*, a mixed cargo and passenger vessel, was the first iron ship measuring 18,914 tons gross with a length of 680 feet, exceeded only in 1901 by the *Celtic* with 20,904 tons gross and 680 feet in length. Her ample proportions sufficed to carry enough coal for a round voyage between England and Australia. She was, besides, the first ship fitted with steam steering gear.

days, as the long trades from the number of days the sailors used to take for completing one round voyage.

Though the freights were depressed during this period, the general condition of trade was fairly good, the total export of coal and iron from England for example showing an increase over the preceding years. This paradox resulted from the enormous increase in steam tonnage which characterises these years. Reflecting the general condition of freights all over the world, the rates for coals from Cardiff to Bombay as also those for the return voyage with general cargo follow a downward path until 1873 when there commences a slight improvement in the minimum rates for general cargo and the maximum rates for coal ; but these rises were merely temporary as is indicated by the continuous fall of the maximum general cargo graph until the year 1878 when things began to improve all round, particularly in the Eastern trades.

The graph-points for this year vividly depict some of the chief features of the trade there mapped out. All shipping calculations are invariably made on the return voyage basis so that the homeward and the outward rates must, in ordinary times, not only meet all the expenses, but also leave the normal profits if the service is to be maintained ; other things being the same, the rate on the general cargo from Bombay to U. K. Continent will have to be high if the coal rate is low and *vice versa*. As we find in the graph the maximum coal rate for the year 1878 being fairly high, it pays the

ship-owner to get his ship back to Cardiff at very low rates that is why the maximum as well as minimum rates for coal and general cargo tend to meet each other, the minimum ones in our instance, actually getting across each other; besides, while the minimum coal rate has gone up as compared with the one ruling in 1876, the maximum rate for general cargo has come down. Moreover as may be expected the maximum coal rate is much higher than the minimum rate for general cargo; because only then could both ends of the shipping account tend to meet. These general remarks have been incorporated at this stage because the complementary character of the trade to and from Bombay is nowhere more graphically brought out in all its aspects than during the year 1878. The next year on the Chart, 1880, also illustrates some interesting features. While both the minimum and maximum coal freights are falling the freights for general cargo from Bombay are, as may be expected, rising with the result that the rising minimum general cargo rate is close to the falling maximum rate of coal thus proving once again the intimate relation between the inward and the outward freights.

This rise in the Indian trade was the only hopeful sign of life in the freight market which, in all other respects, was almost extinct. As a matter of fact, even the rise in the Eastern trade did not last long, for after a good deal of activity during the first half of the year, when large quantities of wheat, rice and seeds

were available for export, dullness set in as in the other trades and there began a period of depression which culminated in the year 1886 which forms the record year, for the lowest freights realised up to that date. Doubtless there were fluctuations during this period but they varied between rates leading to heavy losses and only occasionally rates barely sufficient to meet the working expenses, leave alone the usual depreciation on the steamers and the reasonable profit upon capital invested in them. This state of things is traceable directly to the large overproduction of tonnage during the first three years of the period namely 1881-1883. Besides, most of this tonnage was laid down by speculative builders for inexperienced owners, whose irresponsible activities were fostered by large credits given by banks insisting only upon small margins. As a result there was more tonnage than commodities available for transport, due to the universal contraction of trade which characterises this period. Severe diseases call for severe remedies, with the result that strong reactions succeed prolonged depressions. Economies are found out and practised even by Companies which, before the slump were known to work with the utmost economy consistent with efficiency; the costs of running the steamers are reduced in periods of continuous trade depressions; over-production gives place to restricted output for the best parties only; insolvent and inefficient managers sell their ships at huge losses to experienced men known in shipping circles for their

business ability and finally the public, having burnt its fingers in new floatations, henceforth invests its money only in old established concerns that have proved their capacity and earned a reputation in the trade. It is worthy of notice that it was during this slack period that the ship-owners aware of the benefits of a corporate unit began to get busy over the formation of a shipping federation.

These various causes operating together lead us to a period which may be called "normal" in so far as it presents a varied picture of rises and falls almost rhythmic, illustrating the inter-action of various known forces and the total absence of any unknown factors.

The changing conditions were so welcome that the first year of this period, 1888, has been described "as a remarkable one in the history of the shipping interest—a transformation scene of the whole trade—from abject depression to revival and prosperity"—and the freight drama played against this attractive background for almost two years—rates of 1889 being even higher than those of 1888. In the spring of 1890, however, commenced a decline which in 1892 drove freights to lower figures than known ever before. The evil fruits of unrestricted building which continued throughout the years 1887-1890—the period of revived prosperity—were now being reaped and a long period of depression in freights was anticipated on the analogy of the equally low rates characterising the four years that followed the over-production of tonnage during 1881-

1883. The prediction came only too true, and the depression went deeper and lasted longer than before though the rates of freights and the prices of steamers spurted up a little in 1894 on the prospect of an anticipated naval programme disabling the builders from taking up contracts for merchant vessels. This spurt, though short lived, helped to demoralise the freight market still further as it led to a large output of new tonnage built to the orders of inexperienced men who were misled into ordering new steamers. The evil arising from this source has been thus described.

“The ship-owners proper are not wholly responsible for this suicidal policy of building tonnage not wanted, the trade is overrun by large outside capitalists who invade it as they do any class of trade which has produced profit, thereby bringing it down to a precarious venture with a wide field for making heavy losses and little chance of profit. The evil is quickly done, but the cure though sure to follow, is a long and tedious one.”

The million tons of new shipping turned out during this year, 1894, on the top of the continued over-production during the years 1887-1890 and the consequent continued depression falling during periods of dull trades and lack of new avenues of employment brought about another transformation scene in the freight drama—from prosperity short and rejuvenating to penury long and arduous—for the freights reached their nadir in 1896, the maxima and minima

for general cargo from Bombay to U. K./Continent being the lowest so far known, the minima not being surpassed since. Analysing further the particular year under review, namely 1896, we find that though—but perhaps because—the general freights are low, the coal freights have advanced and continued at a good level all the year round as both the maximum and the minimum coal curves have gone up. But even these rates failed to meet the working expenses of steamers when combined with the ballast level rates prevailing for the complementary trade outwards from Bombay. The following extract from a shipping report for the year will well illustrate the many world-wide factors—political activities, military movements, trade conditions, directions and positions of steamers—that regulate the rates of freight.

“Meantime, the following influences were at
 “work. The general trade of this country (England)
 “maintained the improvement and expansion
 “awakened and started over twelve months ago.
 “The great American Republic, was, however,
 “practically ‘off’ business and all-absorbed in
 “domestic politics for six or nine months, but these
 “matters settled by the elections for a four-years’
 “spell, and in the direction best calculated to ensure
 “stability, credit and confidence, all sections at
 “once turned with renewed vigor to business
 “operations. India and the Far East trades
 “had relapsed from the exaggerated stimulus

" of the Japano-Chinese War into a comatose
 " state, overburthened by an enormous incubus
 " of tonnage, attracted out by, and employed
 " during the war, but which when released
 " with the end of the war overcrowded the Far
 " East and Eastern waters, and was unable to
 " find any employment there or freights to bring
 " it home. This locked up a large proportion of
 " the carrying power of the world, and kept it idle
 " and away from the nearer trades. The corn
 " trade this year assumed a novel and unexpected
 " position—*viz.*, the production of the world was
 " slightly short of the consumptive requirements,
 " even with all stocks taken into account, two of
 " the large producing and exporting countries
 " (India and Australia) being actually converted
 " into considerable importers, and several hitherto
 " small importers making largely increased
 " demands. An important stimulus was thus given
 " to grain movements. These combined influences
 " came to bear on the freight market almost
 " simultaneously, shippers of nearly every descrip-
 " tion all wanting the same thing at the same
 " moment, a rather short supply of the article,
 " result, blind competition sending up the price of
 " tonnage (fictitiously to a large extent) by leaps
 " and bounds, in many cases 200 to 300 per cent.
 " during a few weeks, end of September to end of
 " November. This condition could not last, rates

"in the short trades having advanced so high
 "steamers we reable to run hitherto unheard of
 "ballast passages, and to make up the cost of the
 "ballast passage, and a profit besides, on the short
 "voyages, and thus, distribution of tonnage being
 "again equalised, the well-known fact very soon
 "revealed itself that under normal conditions all
 "trades can be more than amply supplied by the
 "tonnage afloat. By so much as the rise was
 "rapid by so much was the decline equally rapid,
 "and at the close of the year we find freights all
 "round in every trade worse, if anything, than at
 "the commencement."

In 1897, however, a better tone was given to the freight market, as on various other occasions following trade depressions, by the rice ports of the East and the improvement slowly permeated all trades so that in 1898 profitable freights were ruling once again, owing to the demands from all quarters for tonnage exceeding all the tonnage afloat, including the many large steamers built during the year 1898. (This year marks almost the complete cessation of the building of sailing tonnage in the United Kingdom.) Another factor which helped the freights at the time was the Spanish American War which besides providing lucrative employment for many steamers at substantial profit helped to harden freights by removing so much tonnage from the normal trades of the world.

Nearer home, the freights had improved to very profitable levels indeed. As the chart shows the maximum and minimum rates for general cargo record a big rise as compared with the figures of two years ago though the coal rates seem to have remained practically stationary. This was due to the fact that—these coal quotations being practically nominal, owing to a coal strike in Wales,—the chief source of tonnage supply to Bombay was out off. The available steamers in the East were therefore drawn upon for the export trade to Europe. But even here the supply was not equal to the demand as a large number of tramps were engaged in carrying rice from Burma and Siam to China and Japan in consequence of a poor harvest in these countries. Normally the coasting trades of China and Japan were at this time served by a large number of small Scandinavian and German coasters. But these, however, were recalled to Europe for laying up due to excessively low rates ruling for many years in succession in these trades. The result was that when a sudden demand came, the available tonnage consisted of large tramps usually engaged in ocean traffic. No wonder then that the Eastern rates suddenly went up, the Bombay maximum rising to a figure unknown for many preceding years.

An almost similar rise in the coal freights to Bombay is noticeable in the year 1900 when as a result of the declaration of war in South Africa, which offered employment to many "transports", the coal

freights shot up to a level not often surpassed before or since.

The general freights were of course in consequence reduced in this particular trade and were further depressed later but all told the working of the steamers was on the whole a profitable business during the year 1900. It provided a necessary relief to the shipping industry which had passed through a long and severe strain during the period 1890 to 1898. War saved the situation now as it had done once or twice before and as it was destined to do once again. In 1901, however, dullness began to characterise the general freight market as a result of the over-production of tonnage, during the preceding three years of trade revival, coinciding with the general depression in the main trades of the world.

Attention may here be drawn to the periodicity that characterises the fortunes of the freight market. Three or four years of good trade and profits are invariably followed by a period of depression which when later in time continues longer. It would even be true to say that, as the following table shows, at each successive stage while the years of prosperity shrink in numbers, the period of paucity stretches out.

YEARS OF HIGH FREIGHTS.	YEARS OF LOW FREIGHTS.
1870 - 1874	1875 - 1879
1880 - 1883	1884 - 1887
1888 - 1890	1891 - 1897
1898 - 1900	1901 - 1909
1910 - 1912	1913 - 1914

since when the Great War and its after effects have ruled the freight markets of the world. It will be noticed that normally every tenth year marks the first or the last year of high freights.

Taking the freights given in the chart as the basis for India and adding others ruling in the different trades of the world, it will be possible to arrive at a world freight index figure which will show at a glance the relative state of the freight market in general from year to year. Such an index would afford a very good means of comparison with the commodity indices published by important economic journals.

For this purpose the trade routes of the world may be divided into six groups comprising about 26 main routes along which the tramp tonnage of the world serve as the main carriers.

(1) INDIA :—

CARDIFF.—Bombay.

(Coal.)

BOMBAY.—United Kingdom/Continent.

(Seeds.)

(2) FAR EAST AND PACIFIC :—

JAVA.—United Kingdom/Continent.

(Sugar.)

SIAMESE PORTS.—United Kingdom/Continent.

(Rice.)

CHILEAN PORTS.—United Kingdom/Continent.

(Nitrates.)

(3) AUSTRALIA :—

AUSTRALIA.—United Kingdom.

(Agricultural and pastoral products.)

(4) NORTH AMERICA :—

NORTHERN RANGE.—United Kingdom.

(Grain.)

GULF PORTS.—United Kingdom/Continent.

(Timber.)

(5) SOUTH AMERICA :—

TYNE.—Plate.

(Coal, Iron and Steel.)

SOUTH WALES.—Plate.

(Coal.)

SOUTH WALES.—Rio Janeiro.

(Coal.)

SAN LORENZO.—United Kingdom/Continent.

(Wool.)

LOWER PLATE PORTS.—U. K./Continent.

(Frozen Meat.)

BAHIA BLANCA.—United Kingdom/Continent.

(Frozen Meat.)

(6) EUROPEAN WATERS :—

(a) BRITISH HOME TRADE.—

TYNE.—Hamburg.

TYNE.—Havre.

TYNE.—Antwerp.

TYNE.—London.

(b) THE BAY.—

TYNE.—Bordeau.

BILBAO.—Middlesbrough.

(Iron Ore.)

(c) MEDITERRANEAN.—

SOUTH WALES.—Port Said.

SOUTH WALES.—Venice.

TYNE.—Barcelona.

TYNE.—Genoa.

ALEXANDRIA.—United Kingdom.

(Cotton.)

BENISAF.—United Kingdom/Continent.

(Gum.)

CARTHAGENA.—U. K./Continent.

(Wines.)

Basing its calculations upon the freights prevailing along these representative routes, the *Economist*, in its monthly supplement of July 1923, gives a very interesting graph showing the world freight index for the last four years, the base being the period 1898-1913. As may be expected, in view of the prevalent trade depression, the *Economist* graph depicts the continuous downward movement shown on the enclosed chart, the tendencies depicted by which will be brought more up-to-date by the following table, taken from the *Economist*, giving the freight index for the first six months of 1923 for the six main-trades referred to above.

(Only means of outwards and homewards trades are given.)

Route Group.	1923.					
	Jan.	Feb.	Mar.	April.	May.	June.
1. India	120'20	117'83	125'40	133'77	126'99	125'50
2. Far East and Pacific ..	142'14	134'49	125'36	134'06	134'48	133'90
3. Australia ...	150'44	144'21	135'31	124'63	120'18	118'84
4. North America...	126'47	116'85	124'30	133'38	140'03	111'04
5. South America...	124'85	123'93	130'43	137'32	143'05	124'56
6. European Waters (average) ...	132'05	149'60	163'55	142'72	134'91	131'77
<i>Index</i>	<i>132'69</i>	<i>131'15</i>	<i>134'06</i>	<i>134'31</i>	<i>133'27</i>	<i>124'27</i>

(Average 1898-1913=100.)

The index for the month of June 1923 namely 124·27 marks the lowest point reached since the war upto that date.

CHAPTER IV.

SHIPPING EXPENDITURE.

Shipping expenditure, as we have seen, precedes shipping income. The two are not even always co-related. In the extreme but not infrequent case of no cargo being available, even in the absence of any revenues, a large proportion of the expenditure by a shipping Company is kept on in the hope that some cargo will be forthcoming a little later. To this characteristic optimism there is no alternative except the totally ruinous one of closing the line and losing a bulk of the capital invested. Day by day, therefore, whether there is cargo or not, provision has to be made for the operating expenses of the shipping industry. They may be divided into two main classes.

I. Constant charges which may be analysed into three distinct factors—

- (a) Upkeep ;
- (b) Management ;
- (c) Insurance.

II. Variable charges which include—

- (i) Bunkers ;
- (ii) Port, dock and light dues ;
- (iii) Stevedoring ;
- (iv) Claims.

The upkeep of the steamer and other constant items are remarkable not only in the sense that they do not vary whether the steamer is in port or under steam

but also in the sense that they do not fluctuate proportionately with the size of the steamer.

		A steamer of 7400 T. D. W. per day.	A steamer of 4300 T. D. W. per day.
Upkeep ...	...	434	409
Management ...	...	150	150
Insurance ...	...	102	90
		<hr/>	<hr/>
		686	649

Wages.

The wages and victualling of the officers and crew of a steamer would naturally depend upon the number engaged. It is usual, in the case of an Indian coasting steamer of 7400 T. D. W. to have five engineers and four officers including the master of the ship while the crew approximates about fifty-five men, consisting of twenty-two deck-hands, twenty-four men in the engine room, eight stewards, etc., for the saloon and one carpenter. A vessel of about half the size namely 4300 T. D. W. would carry four engineers and four officers and a total crew of thirty-nine men—eighteen on the deck, twelve in the engine room, eight in the saloon and one carpenter.

The messing charges amount to about Rs. 120 per mensem for the officers and engineers and about Rs. 22/- for the lascars. The wages and messing account respectively for Rs. 144, Rs. 127 for the large steamer and Rs. 80 and Rs. 65 for the smaller one. It is usual for the Shipping Companies to provide better

food for their officers and crew than what they are entitled to under their articles.

Below are given the scales (1) as fixed, by the Government in India, for lascar seamen, and (2) as fixed, by the Board of Trade in England, for white seamen:—

**General Scale of daily Provisions for Lascars as per
Government Resolution, Marine Department,
No. 193, dated the 22nd March 1922.**

						Per Day.		
						lb.	oz.	dr.
Rice ...	...	...	...	...	...	1	6	0
Flour ...	...	...	...	...	...	0	10	0
Dal ...	...	...	...	...	...	0	6	0
Ghee...	...	...	...	...	...	0	2	0
Salt ...	...	...	...	...	...	0	0	8
Curry stuff ...	...	...	...	...	...	0	1	0
Dry fish at sea, on five days a week						0	4	0
Fresh meat free from bone at sea on two days a week	...	...	...	...	...	0	4	0
In harbour, daily fresh meat free from bone.						0	4	0
Vegetable, dry, at sea, such as onions, potatoes...	...	...	...	...	...	0	6	0
Vegetables, fresh, in harbour					...	0	8	0
Tamarind ...	...	...	...	...	...	0	1	0
Tea ...	...	...	...	...	...	0	0	4
Sugar ...	...	...	...	...	...	0	1	8
Lime juice ...	...	...	...	...	...	0	1	0
Oil (mustard)	...	...	...	...	...	0	0	12
Water as required	...	...	...	...	...	.....

**Scale of Provisions required by Section 25 of the
Merchant Shipping Act 1906 to be allowed
and served out to the crew during
the voyage.**

NOTE.—The scale agreed upon is in addition to
the Lime and Lemon Juice, and Sugar, or other anti-
scorbutics required by the Merchant Shipping Acts.

						Per Week.
Water	...	...	...	...	...	Qrs. 28
Soft bread	...	...	...	...	...	lbs. 3
Biscuit	...	...	...	...	...	" 4
Salt beef	...	...	...	...	...	" 3
Salt Pork	...	...	...	...	...	" 2
Preserved meat	...	...	...	...	...	" 21
Fish ...	...	...	...	...	...	" 4
Potatoes	...	...	...	...	...	" 6
Dried or compressed vegetables	...	...	...	...	...	" 1
Peas, split	...	...	...	...	...	Pt. 2
Peas, green	...	...	...	...	...	" 3
Calavances or Haricot beans	...	...	...	...	...	" 1
Flour...	...	...	...	...	...	lbs. 3
Rice ...	...	...	...	...	...	" 2
Oat-meal	...	...	...	...	...	oz. 8
Tea ...	...	...	...	...	...	" 1
Coffee	...	...	...	...	...	" 4
Sugar	...	...	...	...	...	lbs. 1
Milk condensed	...	...	...	...	...	" 4
Butter	...	...	...	...	...	" 1
Marmalade or jam	...	...	...	...	...	" 1
Syrup or molasses	...	...	...	...	...	" 1
Suet ...	...	...	...	...	...	" 4
Pickles	...	...	...	...	...	Pt. 1
Dried fruits	...	...	...	...	...	oz. 5
Fine salt	...	...	...	...	...	" 2
Mustard	...	...	...	...	...	" 1
Pepper	...	...	...	...	...	" 4
Curry powder	...	...	...	...	...	" 4
Onions	...	...	...	...	...	" 3

Conditions and Exceptions in applying scale.

1. The issue of provisions for which a total weekly, and no daily, amount is given in the above scale shall be reasonably distributed throughout the week.

2. The issue of soft bread under the scale shall not be required—

(a) in a ship of less than 1000 tons gross registered tonnage ; or

(b) if rough weather renders the making of the bread impracticable ; or

(c) if any ship until the date of the first agreement with the crew entered into after the first day of January nineteen hundred and eight ; but where soft bread is not issued, an equivalent amount of biscuit shall be issued instead.

3. An equal quantity of fish, up to an amount not exceeding three-quarters of a pound in any one week, may be substituted for preserved meat under the above scale.

The fish issued, whether under the scale or as a substitute, must be fresh fish, dried fish, or canned salmon or canned herrings.

4. Within the tropics, a pound and a half of preserved meat or three pounds of fresh meat may be substituted for two pounds of salt pork.

5. Fresh potatoes must be issued for at least the first eight weeks of the voyage in the case of every ship leaving a port within the home trade limits at any time between the last day of September and the first day of May, and at any other time when they can be procured at a reasonable cost.

When fresh potatoes are not so issued, an equal amount of jams, or vegetables preserved in tins, or an equivalent amount of dried or compressed potatoes or dried or compressed vegetables in the proportion of one pound to six pounds of fresh potatoes, must be issued in their place.

6. Fresh vegetables or vegetables preserved in tins, may at any time be substituted for dried or compressed vegetables in the proportion of half a pound of fresh vegetables or vegetables preserved in tins, to one ounce of dried or compressed vegetables.

7. A mixture of coffee and chicory containing not less than seventy-five per cent of coffee may at any time, be substituted for coffee in the proportion of five ounces of the mixture to four ounces of coffee.

8. The dried fruit issued under the above scale must be raisins, sultanas, currants, figs, or prunes.

9. The onions to be issued under the above scale must be fresh onions when in season ; and, when fresh onions are not in season, an equal amount of onions or vegetables preserved in tins, or an equivalent amount

of dried or compressed onions or vegetables in the proportion of one ounce to half a pound of fresh onions must be issued.

10. In port—

- (a) soft bread shall be issued in lieu of biscuit; and
- (b) when procurable at a reasonable cost, a pound and a half of fresh meat and half a pound of fresh vegetables shall be issued daily, and, when fresh meat and fresh vegetables are issued, salt and preserved meat and dried or compressed vegetables need not be issued,

11. The stokehold hands are to receive sufficient oatmeal and one quart of water extra daily while under steam.

This long list of the provisions to be supplied to the white crew together with the higher scale of wages paid them accounts for the fact that along the Indian coast, though more is paid to the officers, usually 25% more than the national maritime scale of wages, but without overtime, and more lascars are engaged—usually 55 men as against the 28 men that would be signed on in Europe for a ship carrying 7,400 tons of cargo—the total wages and victualling bill is much smaller due to the economic superiority of the lascar crew.

A monthly wage and victualling bill for a 7400 ton d. w. steamer.

	European officers and crew.	European officers and Indian crew.
	Rs.	Rs.
Wages of officers * ...	2,762	3,480
Messing of officers ...	1,080 @ £ 8 per officer per month.	1,080 @ Rs. 120 per officer per month.
Wages of crew * ...	3,920	1,700
Messing of crew ...	1,260 @ £ 3 per head per month.	1,083 @ Rs. 19-11 per head per month.
	11,022	7,343

a difference of about Rs. 3,700 per month in favour of the Indian crew, without the overtime allowance.

Stores.

Stores form the next important item of the upkeep of a steamer under which may be included the expenses of painting and docking the steamer. All well-kept steamers have to be properly dry-docked and painted twice a year. Not only does a steamer so well kept give a better speed, but she adds years to her working life. The question of the proper maintenance of a steamer is one of great importance and some experts

* An overtime allowance of one shilling six pence to the European crew and of two shillings six pence to the officer for every hour of work in addition to eight hours per day is now payable and may amount to Rs. 1,500 or Rs. 2,000 per month per steamer.

go as far as to say that the maintenance of the vessels is quite as important as their construction and recommend the whole time appointment of a maintenance engineer, thoroughly acquainted with ship construction and the particular localities in ships liable to decay. It is therefore necessary at the time of the construction of the ship to provide adequate access to such parts as ballast tanks, bunkers, bilges, peaks, etc.

Repairs.

The item of repairs is only occasionally a high one, but provision must be made for it per every day of the steamer's life ; because when they do come, shipping repairs are large and expensive. But apart from the ordinary repairs, there are the re-classification surveys which come every four years. As a rule the ship being then only four years old, Survey No. 1 is easy and inexpensive. Survey No. 2 is no more troublesome. But it is when we come to Survey No. 3 that the possibility of huge repairs stares the ship-owner in the face ; and unless the ship has been properly kept while in commission, this survey might cost even the whole of the selling value of the steamer at the time. A close study of the items mentioned in the footnote will convince the reader of the seriousness of Survey No. 3 and will explain the seeming paradox that a thirteen year old steamer, with the survey passed, is a better proposition than a eleven

year old steamer awaiting Survey No. 3. *

* The Special Survey No. 3 is to be held by two Surveyors, one at least to be an Officer of the world-famous Society, Lloyd's Register of Shipping. It includes the examination of the hull, machinery and boilers of the steamer.

The vessel is to be placed on blocks of sufficient height in a dry dock and the holds, bunkers and peaks are to be cleared for examination. All close ceiling is to be removed so that the flat of bottom may be thoroughly examined. The whole of the frames, stringers, hooks, floor plates, keelsons, engine and boiler bearers, ends of beams, water-tight bulkheads, rivets and inner surfaces of the outside plating are to be exposed. If the Surveyors deem it necessary, the thickness of the plating is to be ascertained by drilling holes in parts to be indicated by them. This drilling is compulsory at the second Special Survey No. 3 in the twenty-fourth year of the steamer.

If the vessel has a double bottom, the ceiling is to be removed therefrom and the efficiency of the tanks tested by a head of water to the height of the light water-line.

When a deck originally required to be 4 inches thick is worn to 3 inches, $3\frac{1}{2}$ inches to $2\frac{3}{4}$ inches, 3 inches to $2\frac{1}{2}$ inches, it is to be renewed.

The chain cables are to be ranged for inspection, and the anchors examined and put in good working condition.

The masts, spars, and general equipment of steam vessels must be examined and found or placed, in good and efficient condition.

The hatches throughout are to be examined in position at the hatchways, and, if defective, are to be renewed or made good. The ventilator coamings and covers are to be examined, and special care is to be taken to see that they are in an efficient condition.

The steering engine and its connections, the steering rods, chains, blocks rudder quadrant, tillers, steering gear, windlass, pumps, sluice valves, watertight doors, and air and sounding pipes are to be carefully examined.

As regards the machinery, the propeller, stern-bush, seat connections and other fastenings as also the screw shaft are to be examined, while the vessel is in dry dock. The screw shaft is to be drawn every third year if the liner, as its cover is called, is continuous and every second year if it has a joint which renders it more liable to corrosion at that part. The cylinders, pistons, slide valves, crank, thrust and tunnel shafts and pumps are to be examined; the condenser to be examined and tested. The arrangements of cocks, pipes, bilge suctions etc., are also to be examined.

Particular attention is paid to the survey of boilers as they are subject to corrosion and other troubles and their failure would lead to much loss of life and property. They are, therefore, surveyed at the first four year old survey and again when they are six years old and after that annually. Water Tube Boilers, however, are to be surveyed annually from the very start.

The boilers and superheaters are to be examined internally and externally, and if deemed necessary by the Surveyors, both boilers and superheaters are to be drilled or tested by hydraulic pressure; the safe working pressure is to be determined by their actual condition.

The steam pipes and the principal boiler mountings are to be examined and the safety valves set to the safe working pressure.

This periodic expenditure, though occurring every twelfth year, has to be constantly borne in mind by the ship-owner throughout the life of the steamer. The cautious owner would therefore provide for about Rs. 100 per day for stores and repairs in estimating the cost of a particular voyage by an ordinary cargo steamer.

Management.

In the charges of management are included the rents of the head and branch office establishments, salaries of the large office staff of heads, assistants and clerks, stationery and advertisement charges, remuneration of representatives abroad, etc.

The management expenses per steamer would no doubt diminish if the Company's fleet increased in number, though perhaps not in an exact ratio; because more steamers would mean more work requiring more men on the staff, and more space for their accommodation.

Insurance.

A Marine Insurance Policy usually covers the hull, machinery, masts, etc., of the vessel; the premiums to be paid; the freight to be earned and the disbursements to be made.

The rate of premium varies of course with each one of the items mentioned above as also the amounts for which the insurance is effected. The hull and machinery of a new steamer would naturally be insured

for a higher amount than those of a steamer say ten years old. Similarly the freight amount covered would be much greater in the case of a steamer normally running say between Australia and the United Kingdom than a steamer engaged in the coastal trade of India. The amounts of premia and disbursements would also vary.

The following concrete example of the detailed items on the insurance policy of a Lloyd's 100 A-1. steamer running along the Indian coast will illustrate the above remarks:—

S.S. _____ 7400 T. D. W., six years old.

Insured Value :

Hull, Machinery, &c. ...	£ 50,000 @ s. 100/- %	£ 2,500 0 0
Premium ...	... „ 2,470 @ s. 22/6d. %	„ 27 15 9
Freight ...	... „ 6,000 @ s. 40/- %	„ 120 0 0
Disbursements ...	... „ 3,000 @ s. 40/- %	„ 60 0 0
		<hr/>
		£ 2,707 15 9

Less—Brokerage @ 5%	
on ...	£ 2,707 15 9
	„ 135 7 9
	<hr/>

Discount for prompt payment @ 10% on..	£ 2,572 8 0	£ 257 4 9
		<hr/>
		£ 2,450 11 0

Less—Half Brokerage returned by the underwriters ...	
	„ 67 13 10
	<hr/>
	£ 2,382 17 2

Add—Policy & Stamp @ s. 6 per £ 1,000 of insured value ...	
	£ 16 5 0
	<hr/>

Premium for 12 months ...	£ 2,399 2 2
Premium for 1 month ...	£ 199 18 6
@ Exc. 1/4 Rs. ...	Rs. 2,998 14 0
Premium for 1 day ...	Rs. 100 0 0
	<hr/>

In addition to the marine insurance of commerce, there is another variety based upon the principle of co-operation ; and most steamship companies are members of these Protection and Indemnity Associations, of which the most well-known in Great Britain are the West of England, the North of England, the Standard, the London Mutual and the United Kingdom Mutual Associations. They protect the members in respect of claims arising from loss of life or personal injury on board or in handling cargo, hospital and medical expenses of officers and crew as also their repatriation expenses. They indemnify the members for claims in respect of the shipment, carriage, discharge or delivery of goods, the intention being to cover the members against the negligence or default of their servants or agents.

The contribution by members is based upon the following co-operative practice. The funds required for the payment of claims are raised by contributions from all the Members in respect of the tonnage entered by them at the estimated rate, per annum of 1/- per ton for Protection and $4\frac{1}{2}$ d. per ton for Indemnity risks, payment to be made in equal instalments every four months.

It is worthy of remark that the principle of laid-up returns so well-known in marine insurance and discussed below is also adopted by these protection clubs. For a steamer laid-up in any safe port for the

space of 30 consecutive days, the contribution is returned usually at the rate of 10 d. per ton per annum upon tonnage entered for Protection Risk and 3 d. per ton per annum in respect of tonnage entered for Indemnity Risk. When, however, the steamer is laid-up without cargo, the return is made at the rate of 11 d. per ton per annum for Protection Risk and 4 d. per ton per annum for Indemnity Risk.

The following clauses, known as Institute Warranties, are usually added to a marine insurance policy:—

- (1) Warranted not to enter or sail from any port or ports, place or places, in British North America on the Atlantic Coast, except Halifax, Louisberg and Sydney for purpose of coaling only, and not north of 50° N. lat., on the Pacific Coast.
- (2) Warranted not to enter the Baltic beyond 13° E. long., or sail from a port therein between 1st October and 1st April.
- (3) Warranted not to sail for or from any port or place on the north Coast of Europe between North Cape and Cape Kanin and not to proceed East of Cape Kanin in the Arctic Ocean.
- (4) Warranted not to sail for or from any port or place in the Behring Sea or Alaska

or Siberia (except that vessels may enter or sail from Vladivostock between 1st May and 1st November.)

- (5) Warranted not to sail with Indian Coal as cargo between 1st March and 30th June

In addition to these "trading warranties," there are the "loading warranties" which limit or prohibit the loading of certain heavy or dangerous articles, such as, "Warranted not to be loaded in excess of her registered tonnage with either lead, marble, stone, coal or iron ; also warranted not to be loaded with lime under deck ; and if loading with grain, warranted to be loaded under the inspection of the Surveyor of the Board of Underwriters, and his certificates as to the proper loading and seaworthiness obtained."

Total prohibition is effected by a warranty "not to load or carry crude petroleum, naphtha, benzine or gasoline." Some of the other warranties such as the coal warranty, mentioned above, may however be waived by the payment of a higher premium.

The insurance of a steamer is effected to safeguard the interest of the owner in the event of the partial or total destruction of the vessel, the payment of a premium being the consideration which binds the insurance company to the terms of the contract. It follows, therefore, that if the risk of the sea is absent, a certain proportion of the premium paid should be returned to the ship owner. The laid-up returns, as these payments are

called, are paid under one of the "Steamer clauses" usually attached to the policy. It reads :—

"Returns % for every 30 consecutive days the vessel may be in port or in dock ; the vessel being, during such period, at the risk of the underwriters."

These the laid-up returns, too, are based separately upon all the four items for which a steamer is usually insured, *i.e.*, hull and machinery ; freight ; premium ; and disbursements. The rate of return of premium for 30 consecutive days, is different for each item, but totals to about 90% of the whole amount of premium otherwise payable for the period of one month.

The accompanying table shows the returns against the lay-up for 30 consecutive days of the steamer, whose insurance details are given above.

S.S. _____ 7400 T. D. W.

	Insured value.	Rate of return.	Amount of return.
Hull, Machinery, etc..	£ 50,000	s. 6/11d. %	£ 172 18 4
Premium	„ 2,470	s. 1/ 8d. %	„ 2 1 2
Freight	„ 6,000	s. 2/ 8d. %	„ 8 0 0
Disbursements	„ 3,000	s. 1/11d. %	„ 2 17 6
			<u>£ 185 17 0</u>

The premium on a steamer's insurance accounts for approximately 6 per cent of the operating costs. It therefore pays a company owning a large fleet to be their own underwriters, *i. e.*, to set apart every year a certain amount as insurance fund solely to meet

the damage to the steamers ; for example the British India Company do not insure their vessels in the market.

Attention may here be drawn to the discrimination against Indian ship-owners in so far as ships holding Lloyd's 100 A-1 certificates, the hall-mark of the shipping world, are rated second-class as soon as they come under Indian management, who, with their shippers have then to pay the higher premia as rates for second-class owners are much higher than those for owners with a first-class status. To remedy this and other evils it is very essential to direct Indian enterprise to marine insurance. It is no longer necessary to emphasize the fact that the commercial development of a country is bound up with the growth of its banking, shipping and insurance interests. "Appreciating the numerous property and credit connections that radiate from the leading shipping, banking and insurance interests at practically every center of foreign trade, British commercial interests, for example, have long realised the advantages of co-operation between these three complementary factors, since each can be made to serve and hasten the growth of the others." * The existence and co-operation of these three factors is the keynote of commercial greatness. The recent American attempts to develop the merchant shipping have been accompanied by equally strong steps taken in connection with marine

* Prof Huebner in his "Marine Insurance."

insurance. The Shipping Act of 1916 lays down, in clause 12, that the Shipping Board is authorised "to ascertain what steps may be necessary to develop an ample marine insurance system as an aid to the development of an American merchant marine." The Merchant Marine Act of 1920 goes a step further and lays down, in section 10, that the Shipping Board should create and maintain out of net revenues from operations and sales of its steamers an insurance fund to cover the vessels, plants and materials belonging to the United States of America.

By the creation of large shipping and insurance companies, in addition to the adequate banking organisations which they possess, the Americans hope to dominate the international trade of the world as the English and, to a certain extent, the Germans have done before them. India would do well to follow the American lead.

Bunkers.

We have so far dealt with merely the constant charges upon a steamer which have to be met whether the steamer is running or not. There are, however, other charges which come to the forefront as soon as the steamer begins to move whether in ballast or partly loaded or fully loaded ; and the most serious item of these, in fact of all other charges is Bunkers.

Now bunkers may be coal or oil according as the vessel is driven by steam or motor. Moreover there is one case in which oil bunkers are used to raise steam,

the boilers being fired by oil instead of coal. A coal burning engine may be transformed for this purpose at very small expense. We thus get coal-burning engines, oil-burning engines and internal-combustion engines. The last has been exhaustively dealt with under the heading of motor-ship on page 31.

The economies which are referred to there as resulting from the use of oil partly hold true even in the case of steamers worked by oil though the full range of advantages from the use of oil can be realised only by the motor-ship. "The substitution of oil for coal merely affects the fuel and not the mechanism through which this is translated into energy, whereas internal-combustion engines utilise new mechanical principles as well as the advantages of the material." *

The following table amply illustrate the relative economies resulting from the use of oil in so far as the labour force is concerned :—

	For Coal- burning Steam Engine.	For Oil- burning Steam Engine.	For Diesel Engine.
Chief Engineer ...	1	1	1
Assistant Engineers ...	3	3	3
Oilers ...	3	3	3
Wipers ...	3	3	3
Store-keeper ...	1	1	1
Firemen ...	9	3	...
Deck Engineer ...	1	1	...
Water tenders ...	3	3	...
Coal passers ...	3	...	...
Mechanist ...	...	...	1
Electrician ...	...	...	1
Total...	27	18	13

* Riegel "Merchant Vessels."

In view of the many advantages of oil, the question may be asked as to why it is that motor-ships have not yet replaced steamships in the Indian trade in view of the supply of oil being ready at hand in Burma. So far as the coastal trade is concerned, as the main advantages of oil-fuel mainly refer to long ocean voyages, steam vessels are likely to hold their own in the coastal traffic for many years to come. As regards the foreign trade, what frightens motor-ships away from the Eastern waters is the difficulty of large repairs should they prove urgent whilst the ship is out here. It is, however, possible that oil-burning steam vessels will in due course supplant coal-burners as even the partial economies, rendered thereby possible, would be appreciated for the short runs along the coast; and the machinery not being much different could be easily attended to by the existing workshops in India.

Whatever however the material that is used as fuel, the costs of bunkers amount to a large proportion of the operating expenses of the vessel, being about forty to fifty per cent in the case of a coal-burning steamer. The steamship in the Indian trades is served by three types of coal, Welsh, Durban and Bengal in the order of their importance as ship's fuel. An 8000 d. w. ton steamer, making 11 knots on 30 tons of Welsh coal per day, would burn, to maintain the same speed, $12\frac{1}{2}\%$ more tons of South African coal and 20% more tons of Indian coal. Other things being the same, however, the

ship-owners prefer to use Welsh coal owing to its higher steam-raising qualities. Mail and passenger steamers therefore burn, as a rule, Welsh coal. But when a maintained high speed is not the sole criterion, the other coals are used if they give similar results at a cheaper price. Therefore, the transport manager, when estimating for a long voyage, will have to choose the quantity and quality of his coals according to their respective prices at various ports of call along the proposed route. A cargo steamer may bunker Moji coal at Yokohama, Welsh coal at Singapore, Bengal coal at Calcutta, Welsh coal at Colombo, Natal coal at Karachi and finish the voyage to the United Kingdom with Welsh coal from Port Said and subsequent ports, where the steamer may be bunkered at successively reduced rates as the port gets nearer to Cardiff. The quantity of coal taken on board at a port would depend upon the freight rates prevailing, for no sane manager would take bunkers when money is to be made by taking cargo. In dull times, however, when freights are very low, it would be cheaper to save time by taking in the requisite amount of coal for the final port of discharge by bunkering to the full capacity at the cheapest coaling station on the way.

It need hardly be said that the quantity of fuel consumed varies directly with the distance travelled. It would, however, be a mistake to imagine that coal consumption merely refers to the running of the steamer. Fuel is not only consumed for driving the

vessel, but for the auxiliaries, working winches and deck machinery, steering gear and heating ship, (when necessary) for lighting up, getting up steam, and on stand-bys. In certain trades, and under not infrequent circumstances, the fuel expenditure under the heading of what might be called secondary items is a not inconsiderable percentage of the total. As an instance, the coasting trade, with its halts at many ports, might be mentioned. When a steamer is in port, either loading or discharging cargo, she consumes about five to seven tons of Welsh coal per day as against the thirty tons she burns when she is going full-speed ahead at eleven knots.

Port Dues.

Port, dock and light dues though connected with the absorbing topic of ports and lighthouses have only a subsidiary place in the shipping industry though low dues are to be recommended as developing trade and guaranteeing a good custom for the port. Examples are not wanting of ports being shunned by steamers due to their heavy charges or slow work. Along the Indian coast, Calcutta is known to be a very expensive port and higher rates of freight are consequently charged upon commodities shipped from or to that port.

Stevedoring.

The cost of loading and discharging the steamer, as also the payment of claims, upon cargo suffering in transit, are the only two items, among the many that compose operating expenses, wherein the separate costs

of the items, approximately ten to twelve per cent. of the total, are known to the ship-owner, all the rest coming under the joint and indeterminate cost of providing the service.

Some aspects of the subject of stevedoring, as relating to the economics of shipping, will be found discussed under the chapters on rate making and classifications.

It may, however, be stated here that the subject of "stowage," as the proper arrangement of cargo is called, is a highly technical matter, success in which requires knowledge, experience and co-operation between the office, the stevedores and the officers of the ship. In order to get the best stowage results, it is usual to have a cargo steamer fitted with 'tween decks which, facilitating the separation of cargo according to its nature and destination, provide its quick discharge in a good condition.

No cargo should be taken on board before the holds of the steamer are carefully cleaned and provided with an adequate amount of dunnage which should be perfectly dry because, if any moisture is present, it will begin to evaporate as soon as the hold gets heated and thus damage the finer kinds of cargo carried by the steamer. Good dunnage is provided by dry bamboos, rattans and reeds which must be piled extra thick if heavy cargo, is to be taken; otherwise for ordinary general cargo, it is sufficient to lay down 6 inches on the floor, 8 to 10 inches on the bilge and 1 to 1½

inches on the sides. In the case of jute or rice shipments, however, it is necessary to dunnage the sides of the hold right up to the deck to prevent the sweat from coming in contact with the cargo. Mats may also be used for this purpose. If, however, a ship is to constantly ply in the rice trade, it would be advisable to fit the sides of the vessel with sparring.

The stowage of rice and other cereals require great care particularly if they are to go over long distances. Not merely must the bags not come in contact with the sides of the steamer or other iron work, but they must not touch any other cargo which is likely to damage rice by smell or contact such as hides or oil. Proper ventilation of the holds is, moreover, very important as otherwise decomposition sets in through "steaming." For short runs such as those along the Indian Coast, however, elaborate ventilation is ordinarily not required but for ocean voyages great attention has to be paid to this point.* It is worth noting that

* "The system of loading a cargo of rice in Rangoon for a European port is to lay down five heights of bags fore-and-aft the hold, parallel to the keel, and then, midway betwixt the centre line and the sides, to place wooden ventilators on edge (supplied by the shippers, as well as ventilator boards) at right angles to them, and about five paces apart; others are laid from side to side, intersecting the fore-and-aft ones, and all opening into each other; then vertical ones are placed, having their lower ends resting on top on one of the junctions, and their upper ends placed inside the ship's iron ventilators; others are placed at the four corners of all hatchways.

Then, and up and down the midship stanchions, fore-and-aft the ship, ventilator boards, are lashed, one on either side, and kept a little apart, so that when the ship is loaded you can stand in the upper hatchway and look down through the slit betwixt the boards to the keelson.

After the first tier of ventilators are in, work goes on again until another five tiers have been added, then come more ventilators, and so on till the ship is full."—Captain McKirdy as quoted by Captain Hilcoat in his "Notes on Stowage."

the main reason for European shipments of "cargo rice," 80 per cent rice and 20 per cent paddy, instead of rice proper, is that the mixture of paddy with rice keeps the piles apart from each other and thus secures better ventilation, enabling the cargo to reach its destination in a good condition. During the voyage, moreover, it is usual to remove, in fine weather, the hatches of the rice holds so that the cargo may be fully ventilated.

The various precautions, taken in the matter of stowage of cargo, dealt with so far, are due to the private initiative of the owner or the officer acting on his behalf. There are, however, various types of cargo whose shipment is regulated by law. The carriage of cattle, dangerous goods such as acids and explosives and of grain in bulk is worked, in different countries, according to the special laws passed by each, with a view to the safety of the ship and the cargo. The Cattle Acts provide for stalls, fresh water, hay, attendance, ventilation, disinfection, medical inspection etc.; dangerous goods are regulated in the matter of their packing and stowage; while the Grain Acts, mostly regulating the carriage of grain in bulk, require shifting boards and properly constructed feeders.

When grain is being shipped in bulk, it is nowadays usual to pass it into the ship's holds through elevators. By this means as many as 2500 tons of grain are loaded in one day by a single elevator in America where the elevators are used even when

the grain is to be bagged, the empty bags being held up against the hold-end of the elevator shoots and when filled, sewn up and stowed away in its proper place.

Space in a ship's hold is money. Care should therefore be taken to leave no part of the hold unoccupied. Places between beams and some out-of-the-way corners do not admit of the stowage of bags. In such cases, it is usual to book, at low rates, small bundles of inferior quality goods which are useful in filling up odd empty places known as "broken stowage." It is said that the selection of suitable articles for this purpose will enable the ship to stow about five per cent more cargo than would otherwise be the case.

The use of all available spaces must be accompanied with despatch in doing so, otherwise the game would not be worth the candle. The saving of time at a port is, if anything, more important than the scaling of the cargo right up to the ceiling. It is, therefore, necessary that the stevedores should do their work with all due speed.

As damage may be done to the cargo in the process of its transfer from the ship to the shore or *vice versa*, it is necessary that great care should be devoted to the handling of the cargo during the process. For this purpose, small packages such as bags, crates etc., are bound together in a sling and hooked on to a cable worked by a crane or a winch. Ordinarily a *single hook*

is used but for lifting barrels, pieces of old iron etc., *cant hooks* are employed as they enable more cargo to be lifted in one "draft" or lift. Slings, which bind the cargo packages, are of various kinds. The *rope sling* is used for boxes, bales etc.; the *web sling* for soft bags; the *net sling* for cement bags, and frozen meat; *chain sling* for steel rails; while special *platform slings* fitted with angle irons are used to protect fragile cases and cargo.

The work of stowage and stevedoring can, however, run smoothly and continuously only if, particularly in the case of loading a steamer, the traffic manager has made his plans well in advance, booking cargo of the right type and weight required to put the steamer down to her marks, and arranging for the consignees of the inward cargo to remove their stuff as quickly as possible from the wharf so that, from the berthing of the steamer to the covering of the holds with the hatches, no hour of the working time is lost in doing nothing.

To give the reader some idea of the normal rates of loading and discharging various types of cargo with ships' winches or shore cranes or both at representative world ports, the following tables, presented by Mr. A. R. T. Woods, the General Manager of the Nelson Line of Steamers to the International Navigation Congress, held in London, in June 1923, are reproduced below:—

**Tons of Cargo Discharged per Hatch, per Day of 8 Hours with an
Average Gang of 14 Men.**

Class of Cargo.	Gear employed.	London.	Liverpool.	Glasgow.	Southampton.	Antwerp.	Havre.	Marseilles.	New York.	Montreal.	Buenos Ayres.	Lisbon.	Leixoes.
Timber.	Ship's winches only ...	82	84	—	150	61	75	—	—	—	53	76	70
	Ship's winches and shore cranes combined ...	—	—	230	—	—	—	—	—	—	—	—	—
Cotton and Wool.	Ship's winches only ...	—	224	93	—	70	—	—	76	—	—	70	50
	Shore cranes only ...	—	—	—	—	103	—	—	—	—	—	—	—
	Ship's winches and shore cranes combined ...	—	280	—	175	112	140	—	—	—	—	—	—
Cased Goods.	Ship's winches only ...	136	168	116	—	56	—	—	—	—	—	76	80
	Shore cranes only ...	150	—	—	163	63	140	190	—	—	—	—	—
	Ship's winches and shore cranes combined ...	—	—	—	—	77	—	—	—	—	—	—	—
	Escalator ...	113	—	—	—	—	—	—	—	—	—	—	—
Cargo in Bags.	Ship's winches only ...	110	280	—	—	84	—	—	92	—	114	95	100
	Shore cranes only ...	97	—	—	—	98	252	280	92	—	—	—	—
	Ship's winches and shore cranes combined ...	—	280	186	—	105	252	—	—	—	131	—	—
	—	—	—	—	—	—	—	—	—	—	—	—	—
Meat Cargoes.	Ship's winches only ...	75	70	116	151	49	41	—	—	—	—	89	—
	Shore cranes only ...	—	—	—	151	60	—	86	—	—	—	—	—
	Ship's winches and conveyors ...	94	—	—	—	—	—	—	—	—	—	—	—
	Ship's winches and shore cranes combined ...	—	—	—	—	70	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—	—
Grain in Bags.	Ship's winches only ...	88	163	—	—	56	150	—	—	—	—	89	90
	Shore cranes only ...	97	—	—	—	70	210	280	—	—	—	—	—
	Ship's winches and shore cranes combined ...	—	245	186	—	84	—	—	—	—	—	—	—
	—	—	—	—	—	—	—	—	—	—	—	—	—
Grain in Bulk.	Pneumatic elevator ...	500	1500	640	—	1000	640	—	—	—	—	—	—
	Bucket elevator... ..	—	700	1000	200	—	—	—	—	—	—	—	—
	Automatic grab and crane	—	—	—	—	—	160	—	—	—	—	—	—
	Ship's winches only ...	—	—	—	—	—	—	—	—	—	—	100	90
Mineral ores in Bulk.	Shore cranes only ...	—	260	140	—	—	—	—	152	—	—	—	—
General Cargo.	Ship's winches only ...	120	150	—	163	70	130	—	101	120	131	76	80
	Shore cranes only ...	111	—	—	186	112	182	—	101	—	—	—	—
	Ship's winches and shore cranes combined ...	—	—	130	291	122	—	—	—	—	131	—	—

**Tons of Cargo Loaded per Hatch, per Day of 8 Hours with an
Average Gang of 14 Men.**

Class of Cargo.	Gear employed.	London.	Liverpool.	Glasgow.	Southampton.	Antwerp.	Havre.	Marseilles.	New York.	Montreal.	Buenos Ayres.	Lisbon.	Leixoes.
General Cargo.	Ship's winches only ...	99	112	—	140	56	182	—	116	90	122	89	80
	Shore cranes only ...	105	—	—	163	70	182	—	116	—	—	—	—
	Ship's winches and shore cranes combined ...	—	—	116	230	77	—	—	—	—	—	—	—
Cased Goods.	Ship's winches only ...	—	—	—	—	56	70	—	116	—	175	76	80
	Shore cranes only ...	—	—	—	—	70	140	—	—	—	—	—	—
	Ship's winches and shore cranes combined ...	—	—	116	—	77	—	—	—	—	—	—	—
Cargo in Bags.	Ship's winches only ...	—	—	—	—	84	—	—	103	—	131	89	80
	Shore cranes only ...	—	—	—	—	98	252	—	103	—	—	—	—
	Ship's winches and shore cranes combined ...	—	—	140	—	105	—	—	—	—	—	—	—
Bale Goods.	Ship's winches only ...	—	—	—	—	5	70	—	—	—	93	76	80
	Shore cranes only ...	—	—	—	—	70	140	—	—	—	—	—	—
	Ship's winches and shore cranes combined ...	—	—	112	—	77	—	—	—	—	—	—	—
Coal.	Bucket elevator ...	930	1200	—	1000	—	—	—	—	—	—	—	—
	Coal tips ...	—	1200	1000	—	—	—	—	—	—	—	—	—
	Crane and grab... ..	1040	900	—	—	1000	450	—	—	—	—	—	—
Grain in Bulk.	Grand Trunk Railway elevator ...	—	—	—	—	—	—	—	—	4000	—	—	—
	Harbour Commissioner's elevators ...	—	—	—	—	—	—	—	—	3200	—	—	—
	Floating elevator ...	—	—	—	—	—	—	—	2000	—	500	—	—

As most ordinary cargo steamers have four or five hatches, the larger ones having as many as eight, the figures, given under each port, should be multiplied accordingly, if the average rate of loading or discharging cargo for the ship as a whole is required.

The first lesson of the table is that all ports are not equal either in capacity or equipment. Efficiency or otherwise of the personnel may also account for the varieties in the rates of speed at which work is done at different ports. Turning now to the method of ship-

ment, we find that grain when shipped in bulk is more quickly handled than in bags as the former method renders possible the use of elevators which, at Montreal, load the holds of a steamer with as many as 4000 tons of grain per day. Mechanical appliances add to the speed attained in dealing with coal also. Cargo in bags leads to quicker work than either baled goods or cased cargo because with bags the making of the "draft," its slinging and movement become ever so much easier and consequently quicker.

Taking the commodity as such, we find that timber is very slow to discharge ; it is equally slow to load. However, it makes up, for the delay it causes, by the high rate of freight it pays.

It will further be seen that the combination of ship's winches and shore cranes does not give proportionately good results. This is due to the fact that nowadays with the equipments of modern cargo gear on the ships and the installation of up-to-date machinery on the shore, the speed of loading and discharging cargo has overtaken the quantity that can be stored on or taken away from the wharf. Ample storage facilities on the wharf and despatch in the removal of cargo are now wanted to supplement the facilities provided by the ship-owners and the harbour authorities, so that the ship may be turned round from the port in as short a time as possible. At some ports, however, where the wharf facilities are not adequate for all the ships calling there, the work of loading and

discharging is carried out "in stream," both sides of the ship being worked simultaneously with the aid of lighters, as at Rangoon, the quick despatch thus acquired giving the port a well-deserved reputation in that regard. The saving of time by working both sides is so great that, even in ports like Bombay where steamers are usually berthed alongside a wharf, the cargo should be dealt with simultaneously on either side of the steamer, small packages being handled on the wharf side, the heavy packages, timber etc., being discharged into lighters on the waterside.

Claims.

Claims, preferred by the shippers against the ship-owners, are usually for short delivery and slackage of bags or for damage to their contents. The first arises when the number of bags delivered to the consignee are less than the number shipped at the port of shipment. Such a claim should be forwarded to the Company within a month of the arrival of the steamer. If the claim is proved, the full value of the contents according to the current market rate has to be paid for. Slackage results from torn or mouth-burst bags and claims arising therefrom are usually not paid by the shipping company in India except in the case of imports of rice from Rangoon to Bombay. The necessity for the proper packing of cargo is very great, cargo in thin or torn bags not being accepted by the ship; in cases of doubtful bags, the fact is noted on the Bill of Lading, thus exonerating the company from payment of the claim in case one is preferred. In some cases even, particularly

where the cargo is a valuable commodity, the nature of the packing required is indicated on the Bill of Lading, for example, the usual pepper clause reads "Ship not responsible for tearing of bags or loss of contents unless bags are of A twills, 48 by $26\frac{1}{2}$ inches and of $2\frac{7}{8}$ lbs."

As regards loss of or damage to the cargo, the ship is usually protected by the following clause in the Bill of Lading : —

" The Company shall not be liable for loss damage or delay resulting directly or indirectly from any of the following causes, howsoever, occasioned *viz.* : Act of God ; King's enemies ; piracy ; robbery ; theft or pilferage with or without violence on board or elsewhere, and whether by persons in the service of the Company or not ; arrests and restraints of princes, rulers, or people ; riots and civil commotions ; strikes ; lockouts or other labour disturbances ; barratry ; jettison ; collision ; fire ; breakage or leakage ; vermin ; sweat ; rust ; temperature of holds ; climate ; rain, injurious effect of other goods, whether by contact or otherwise howsoever, perils, dangers and accidents of the sea, rivers or navigation ; unseaworthiness, unfitness or defect of any kind in hull, machinery, tackle equipment, or appurtenances at the commencement or any stage of the voyage (provided reasonable means have been taken by the Company at the port of shipment to prevent same) ; any act, neglect or default whatsoever of pilot, master, officers, mariners, engineers, stevedores or other servants or agents whatsoever of

the Company, on board or elsewhere, in the management, navigation or otherwise of the steamer or of any other steamer belonging to the Company, or in the loading, stowing, carriage, unloading or delivery of the cargo."

Special clauses are also inserted in the Bill of Lading for various kinds of cargo. In the case of shipments of rice, the shipping company does not hold itself responsible for damage from heating or caking of rice or bran.

The timber clauses in India usually read as under:—

"In case of Timber shipment the Steamer is not responsible for bursting of bundles and loss of contents."

"Number of pieces in bundles not known."

"Not responsible for breakage, chippage, splitting of ends, marks and counter marks."

"Claims for shortage of scantlings &c. will only be entertained on the basis of the average measurements declared in Bill of Lading."

"Not responsible for breaking or loosening of bundles and shortage at the time of delivery, loose pieces to be delivered to consignees in proportion to their consignments."

“ Delivery will be given by the Company's landing contractor at Lakari Bunder or Sewri (in Bombay) on payment of usual landing charges.”

The landing contractor is introduced, in the case of timber shipments, as an intermediary between the ship-owner and the consignee because thereby undue delay to the steamer, resulting from slow discharge, is avoided.

No allowances are made for wastage, shrinkage or dryage in the case of salt, saltpetre, dates, fruit and perishable goods.

Glass, china, earthenware, iron casting and other fragile articles are carried on the express condition that the ship is free from liability for breakage, howsoever caused.

As regards damage to the cargo through water, if due to fresh water, the ship is responsible ; if due to salt water, the damage has to be recovered from the insurance company with which the goods are insured.

Claims against the ship-owner for damage to the cargo must be notified to the company in writing before the goods are removed. The payments made by a shipping company in regard to claims are recoverable from the Protection Club as stated in the section dealing with insurance on p. 97.

In summing up all the expenses, both constant and variable, we append a table giving the percentages of each item for a large-sized and a small-sized steamer.

**Percentage of total expenses of two steamers
carrying rice from Rangoon to Bombay
and returning in ballast.**

	7,400 ton d. w. Steamer.	4,300 ton d. w. Steamer.
Upkeep	25%	27.9%
Management	8.6%	9.9%
Insurance	5.7%	6. %
Bunkers	41.3%	39.7%
Port Dock and Light Dues	6.7%	5.9%
Stevedoring	10. %	8.3%
Claims	2.7%	2.3%

This table, as also the previous one on p. 86, dealing with only the constant items of expenditure, conclusively shows that a large vessel is preferable to a smaller one. But the size of a ship will depend upon the trade she is intended to serve. We may, however, lay down the general proposition that, other things being equal, a large vessel would prove more economical in running than a smaller one. Apart from the economy of staff, a larger steamer would earn a higher amount of freight. The possibility that voyages in ballast may prove more costly in her case needs to be faced but it will be found, in practice, that this slightly higher loss is more than set off by the much higher earning capacity.

The reason why only large steamers are used by companies enjoying a monopolistic control of a trade lies in this fact that other things being equal a

larger steamer earns a higher profit than a smaller one.

It thus follows that, during a freight war, for example, a larger vessel will lose more than a smaller vessel. A new company trying to enter a trade monopolised by existing interests should, therefore, begin by chartering small vessels, in addition to large owned vessels, for the sake of competition. Experience shows that during a rate-war, a small steamer helps the traffic manager to minimise his losses, besides enabling him to use her as a "fighting ship." Thus during the last great freight war on the Indian coast, between the British India and the Scindia Company, when the rates of freight of rice from Rangoon to Bombay were forced down from Rs. 18 to Rs. 6—against the probable cost of Rs. 11 to carry a ton of rice for the distance of 2,000 miles—while a 7400 d. w. tonner with full cargo of rice from Rangoon to Bombay and return in ballast to Rangoon would have shown a loss of about Rs. 33,000 for the round voyage, a smaller vessel, of say 4,300 tons, would, in an equivalent case, show a loss of Rs. 26,000, a difference in favour of the smaller steamer of Rs. 7,000. Of course, when normal rates prevail the amount of profit on the larger steamer would be much higher as the following estimates* show :—

7400 d.w. ton Steamer.				4,300 d.w. ton Steamer.	
At Rs. 6	<i>Loss</i>	Rs. 33,000		Rs. 26,000	
" " 10	"	6,000		" 11,000	
" " 12	<i>Profit</i>	7,500		" 3,500	
" " 15	"	27,500		" 9,000	
" " 18	"	47,500		" 21,000	

* In these estimates the item of depreciation of the steamers has not been taken into account.

From the point of view of operating costs, therefore, the larger vessel is more economical. Its proportionately smaller capital cost per deadweight ton has been referred to on page 21. A large-sized cargo steamer is, therefore, a more paying proposition than a smaller one.

There are, however, other considerations. Short runs which do not provide very large quantities of cargo either at the terminal or intermediate ports would require small vessels which only could provide economic service. A cargo service between Karachi and Tuticorin or one between Burma ports and those in the Bay of Bengal would call for vessels not exceeding 5000 tons d. w.

Sometimes even natural factors may render small vessels desirable. If a regular service is to run from and to a tidal river port like Moulmein, it is necessary that the draft of the steamer should be small enough to enable her to navigate these waters whenever required.

There is one more argument in favour of the small ship to which special attention must be drawn, as it affects the interests of the shippers. Not merely can the small steamer be easily filled up, but she has not to be kept waiting for the balance usually required, in slack seasons, to put a large steamer down to her marks. The early shippers are not thus victimised in the interests of the ship-owner as the shipper may possibly lose his market, and has, in any case, his funds tied up by the delay in sailing. Besides, along many of the ports on the Indian coast, enquiries for lots of 3 to 5

thousand tons are quite frequent. It is possible, moreover, that the smaller ships may help to bring into prominence some of the decaying ports of India. Larger steamers are chary of calling at these ports because the smallness of the quantity to be picked up may not even pay the port and dock dues of large vessels, which are usually reckoned per net registered tons.

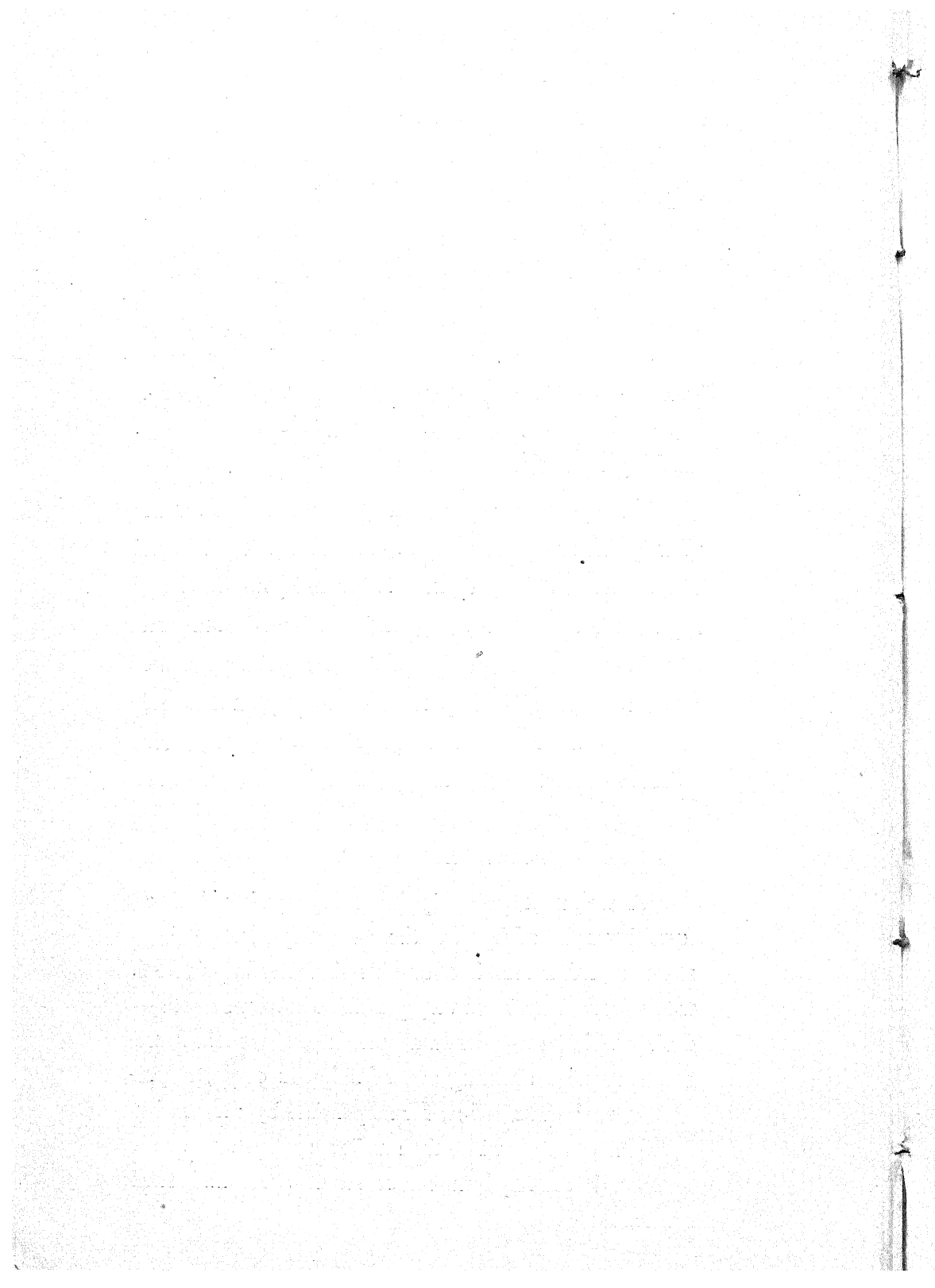
It thus follows that though the interests of the ship-owners would incline them towards large tonnage, the interests of some shippers and of trade at small ports necessitate the provision of small vessels. An analysis of the services maintained in India by the British India Steam Navigation Company will show that the interests of small ports are very inadequately attended to. For the 4000 long sea-coast of India only a few terminal ports are provided namely Rangoon, Calcutta, Madras, Bombay and Karachi, the maritime province of Bihar and Orissa not being allotted even one terminal port for shipment of cargo. The result is that products of Orissa have to be sent to Calcutta by rail before they can be shipped in steamers. What a handicap to the growth of the trade of the Province !

Besides, the trade of the small ports along the western coast of India remains undeveloped. Shipments from Kathiawar ports to other Indian ports are difficult without transshipment at Bombay which means an addition of Rs. 6 per ton of the commodity carried. Shipments from Marmagaoa to Colombo sometimes reach their destination after a voyage to

Bombay or even to Karachi! The products in the hinterland of Marmagoa, so far merely a centre for shipment of manganese ore to Europe, find no adequate outlet to the great loss of the country. The shippers of Badagara, Tellicherry and Cannanore ports have to arrange for shipment of their cargo from Calicut because the large steamers in the trade prefer to take all cargo at one central port. The shippers of Alleppey have, sometimes, to send their goods by steamers awaiting at Cochin.

The question requires, moreover, a study from the view point of the consumers at these small ports and the areas served by them. As there is no direct and regular service from Rangoon and other Burma ports to the Konkan and the Kathiawar ports the consumers of Burma rice at these ports have to pay on their rice the additional cost of haulage from Bombay by rails. Direct service to Verawal, Porebander, Vengurla and Marmagoa would reduce the price of rice to the poor consumers of the districts.

A well managed shipping company should, therefore, have in addition to the necessary fleet of large steamers, a few vessels of smaller size. The large vessels will be economical and very profitable in busy seasons,—during which a fleet of small steamers alone will necessitate frequent shutting out of shippers cargo, a procedure to be avoided as far as possible by the prudent traffic manager,—while the smaller steamers will meet adequately the requirements of small ports and slack seasons.



CHAPTER V.

SHIPPING CONFERENCES.

A peculiarly characteristic feature of the shipping industry is the Shipping "Ring" or "Conference," which is a combination, more or less close, of shipping companies formed for the purpose of regulating or restricting competition in the carrying trade on a given trade route or routes. The vessels employed by these companies are usually of the class known as Liners, *i.e.*, vessels of high class and speed, sailing and arriving at fixed dates advertised beforehand. In addition to mail steamers and passenger steamers, they include vessels which carry cargo only and are known as cargo liners. In some cases, vessels which operate elsewhere and at other times as tramps are also employed by the Conference Lines.

The operations of a Conference are confined to a particular trade route, that is to say, the engagements, which the various companies enter into with one another, only apply to the trade within certain definite areas or between specific ports. A steamship company may be a member of several Conferences, but its engagements in one are independent of those in any other. The alliance is not one of steamship companies for all purposes, but only as to their operations within a specified area.

Large economies thus result by the elimination of competition among the ship-owners themselves who are thus enabled to make larger profits. Not content, however, with the manifold advantages of co-operation, the ship-owners have gone a step further and attempted to command the continued "loyalty" of their shippers by the adoption of a unique system which, in view of its evil effects, must be exhaustively examined.

The system of Deferred Rebates, by which the Shipping Conferences turn themselves into practically monopolistic and generally anti-social organizations, works as under :—

The companies issue a notice or circular to shippers informing them that, if at the end of a certain period (usually four or six months) they have not shipped goods by any vessels other than those despatched by members of the conferences, they will be credited with a sum equivalent to a certain part (usually 10 per cent) of the aggregate freights paid on their shipments during that period, and that this sum will be paid over to them, if at the end of a further period (usually four or six months) they have continued to confine their shipments to vessels belonging to members of the Conference. The sum so paid is known as a deferred rebate. Thus, in the Indian Coastal Trade, at the present day, the amount of the rebate payable is 10 per cent of the freight paid by the shipper. The rebates are calculated in respect of two six-monthly periods ending with 30th

June and 31st December respectively, but their payment to the shipper is not due until a further period of six months has elapsed; that is to say, as to shipments made between the 1st January and the 30th June, the rebates are payable on the 1st January following, and, as to shipments made between the 1st July and the 31st December, the rebates are payable on the 1st July next. It follows that, in every instance, the payment of the rebate on any particular item of cargo is withheld by the ship-owners for at least six months or more and that, in the case of cargo shipped on the 1st January, or 1st July, it is withheld for a period of full twelve months. If during either six-monthly period a shipper sends any quantity of goods, however small, by a vessel other than those despatched by the Conference Lines, he becomes disentitled to rebates on any of his shipments by Conference vessels during that period and the preceding one. He moreover, courts another danger. It is not unusual for the Conference Lines to penalize a "disloyal" shipper by refusing him space in their steamers for subsequent shipments. Fear of a possible ruin, therefore, prevents a shipper from patronizing a new Shipping Company.

In order to obtain the rebate due to him, a shipper has to make a statement on a form of claim prescribed by the Conference Lines to the effect that he has complied with the conditions of the rebate circular, and, in the case of most Conferences, this statement has to be sent within a prescribed period to the Shipping

Company from whom the rebates are claimed. If a shipper has shipped goods by more than one company in the Conference, he claims from each of those Companies the amount of rebates due upon his shipments in each case. The rebates, it will be noted, are usually paid by the individual members of the Conference and not by the Conference as a whole. In the Bombay-Rangoon trade the shipper has to forward the following letter to the Shipping Company before he can receive the rebate due to him :—

“Annexed we beg to hand you a list of our shipments of cargo by your line of steamers to Rangoon *during the six-months* endingon the freight of which we claim a rebate of 10 per cent in consideration of our not having made or held any interest whatever in other shipments from Bombay to that port by vessels other than those belonging to the British India Steam Navigation Coy., Ltd. and Asiatic S. N. Coy., Ltd., during the past twelve months.”

Such is the essence of the Rebate System. Its chief object is to bind the shipper to the Conference Lines by making the receipt of a sum of money in the form of a rebate of freight contingent upon absolute “loyalty” to the Conference, so far as shipments within the area of the Conference are concerned. The system imposes a continuous obligation upon the shipper to send his goods by the Con-

ference Lines. The shipper, it is true, is not bound to send his goods by the Conference Lines. He does not by contract, expressed or implied, bind himself to do so. But for the shipper, who has once sent his goods by the Conference Lines, there is, unless he chooses to cease shipping altogether for a considerable period of time, no day in the year on which he is free to ship by 'outside' vessels, save by foregoing his rebates. Thus the shipper, who on the 1st January, claims rebates on shipments between the previous 1st January and 30th June, has already been credited with a certain sum in respect of his shipments between 1st July and 31st December following, but he becomes disentitled to these if he ships any cargo, even once, by an outside steamer in the next six months, and by the time that the payment of these rebates falls due he is credited provisionally with others, for which a further period of six months 'loyalty' has to be served and so on, *in perpetuum*.

The cardinal principle of the system is that a shipper, who during a particular period ceases to confine his shipments exclusively to the Conference, loses his right to the rebate not only in respect of goods shipped during that period, but also in respect of goods shipped during the previous period.

Turning now to the history of the Shipping Rings and rebates we find it thus summed up by the late Sir Thomas Sutherland, for many years, the head of the

Peninsular and Oriental Steam Navigation Company,
Limited:—

“Conferences, pooling arrangements and rebates were unknown in the Eastern trade until some years after the Suez Canal was opened. The carrying trade was free at all points to whosoever might choose to put his capital into it, and yet rates of freight were then higher than they have been since. This state of affairs was due to the fact that the supply of steam tonnage was then limited. But, in a very few years, an entire change in the situation was evolved by what was called the compound engine, and the tonnage in the Eastern trade soon outstripped its requirements. The natural result was impoverished rates and a struggle for existence which led to several lines withdrawing from the field, although they had entered under fair enough auspices. *It was in the late seventies that the remaining lines, then engaged in a hand-to-hand competition, began to draw together so as to stave off disaster by coming to arrangements between themselves and with their customers.*” *

The “hand-to-hand competition” was not simply between the tramps on the one hand and the liners on the other but also between the different lines of steamers; to put down and prevent such competition became, therefore, the main object of the Shipping Conferences.

* Evidence before the Royal Commission on Shipping Rings.

With that end in view, the First Shipping Ring, the Calcutta Conference, was formed in 1875. It consisted of the Peninsular and Oriental Company, the British India Company, and one or two other lines of London; Geo. Smith & Sons, and the City Line of Glasgow; Rathbone Bros. & Co., and T. & J. Harrison of Liverpool. After experimenting with various forms of contract between the shippers and the ship-owners, the system of the Deferred Rebates was introduced in 1877 and first applied to the shipment of Manchester piece-goods. Having benefitted by the system, the shipping companies lost no time in extending it to other trades and other routes. It was introduced in the China trade in 1879, in the Australian trade in 1884, in the South African trade in 1886, in the West African trade in 1895, in the River Plate and South Brazil trades in 1896, in the North Brazil trade in 1895, and in the trade to the West Coast of South America in 1904. Practically then, with the exception of the Atlantic trade which is served by the spacious passenger liners, the system, so far as England is concerned, applies to all the cargo, except coal and special shipments, shipped outwards from the country.

As regards India, the following Conferences are of particular interest from the point of view of Indian trade :—

The United Kingdom to India Conference primarily affects cotton and woollen goods which are

pooled in certain proportions, the Liverpool Lines having a preponderating share of the pool owing to the favoured position of that port. Apart from this pool, there is, of course, a general engagement as to rates of freight, and as to non-interference with each others legitimate sphere of operations. The East Coast Lines' sphere runs from Newcastle, south to Southampton (inclusive), and that of the West Coast Lines from Southampton, west-about to Newcastle. The London companies (P. & O. and B. I.) work the East Coast with Wilson's of Hull, and the Hansa Company. Continental ports such as Antwerp, are included in the sphere of the East Coast. But this was not effected without a big freight war between the German and the British shipping companies regarding the Antwerp to Calcutta and Bombay trade—a struggle, lasting for over 18 months, in which the Conference, according to Sir Thomas Sutherland, lost several hundreds of thousands of pounds, to say nothing of the losses of the German company.

The object of pooling freight, referred to above, is that the Lines, between each other, shall play fair. The approximate amount of the freight which each Line should carry is fixed beforehand, so that the limit of paying or receiving should be as narrow as possible. If any Line carries largely in excess of its proper share, there is an immediate outcry for a re-adjustment of the pool, so as to meet the necessity of the case. Just as the Rebate System provides a means

of keeping the shippers "loyal," the pool keeps the Lines straight among themselves, because each ship-owner is rather keen to do as well as possible for himself. It might even happen that unless a keen watch is kept, a member of the Conference may share the pool monies without carrying any cargo. In fact, it did happen in the Bombay-China trade that one of the Lines, coolly pocketed, for some years, its share of the pool without carrying a single ton of cargo. The effect was that the other owners insisted upon the pool being readjusted, and upon bringing the carrying rate up to 90 per cent. The carrying rate under ordinary circumstances is only upto about 70 per cent., but in this case it was found necessary to correct the mischief by making the carrying rate 90 per cent. and leaving only a trifle for distribution in the pool.

The Indian Homeward Conference extends only to tea from Calcutta, and tea and general cargo from Ceylon. As to Calcutta, a certain part of the freight is pooled and divided into definite proportions amongst the Conference Lines, the under or over carriage of each Line being settled at stated periods.

A discount of 5s. per ton is paid over the counter to all signatories to the new Tea Agreement*—the cancellation of the deferred nature of the rebate allowed

* The new Tea Agreement of 7th September, 1907, which fixes the rate at 27s. 6d. net, took the place of the Agreement of 22nd April, 1895, under which the tea rate was arranged monthly, and was always 15s. above the mean rate on jute, linseed, and wheat. The Conference, moreover, is now under obligation not to give preference to cargo paying a higher rate than tea, *i. e.*, not to shut out tea to secure better paying cargo.

is a remarkable feat achieved by the Indian Tea Association after many years of strenuous opposition*—but non-signatories do not receive this cash discount, but the same amount in the form of deferred rebate. The signatories, however, practically cover the bulk of the trade.

All Colombo shipments are pooled and divided in certain proportions, and the Rebate System applies.

So far as the bulk of the Indian Homeward trade is concerned, as it consists, to a large extent of heavy and rough cargo, and is greatly in excess of the outward tonnage supplied by the Conference, the latter merely operates in agreeing, among their own Lines, uniform rates of freight which are, however, necessarily affected by the chartering of "tramp" tonnage—a subject fully discussed on page 50.

The Conference between India, China and Japan existed before the Great War between the P. & O. Company, the Austrian Lloyds, the Navigazione Generale Italiana and the Nippon Yusen Kaisha. With the exception of opium, which was carried exclusively by the mail steamers of the P. & O. Company, all the other cargo was pooled, according to a fixed scale of sailings, by each Company.

The return trade from the Far East towards India is quite insignificant but is regulated in much the same way as above.

* For a history of the struggle, see the author's pamphlet on the "Deferred Rebate System."

To further illustrate the various types of Conference control, the following additional examples are given :—

The United Kingdom to China Conference may be said to run exactly on the same lines as the Indian Conference. Lancashire and Yorkshire goods are pooled, and the spheres of London and Liverpool are defined and respected. The rebate system applies throughout.

The China Homeward Conference differs from the Indian Homeward Conference in as much as the China Conference virtually supplies tonnage for the homeward trade as well as the outward. The rebate system applies both ways, and the whole of the homeward trade from Japan, China and the Straits (with the exception of one or two descriptions of cargo left open for certain reasons) is pooled by the English Lines mentioned in the rebate circular, with the addition of the Hamburg-American Company, and the Nippon Yusen Kaisha.

The Australian Outward Conference is controlled in a way absolutely different from the India and China Conferences by a combination of owners and brokers, popularly known as "Davis." "Davis," is believed to be the name of the house or office wherein this combination, many years ago, commenced existence, in the days when the Australian trade was principally carried on by sailing ships. The

owners of those sailing vessels were up in Aberdeen and in Greenock mostly—the Scotsmen were very much to the front in the Australian trade in the early days—and they could not, of course, load their own ships in London. Consequently they put themselves into the hands of brokers. After a few years, however, the owners and brokers combined themselves into a Conference called “Davis,” various members of which held their interest in it by means of shares, allotted in proportion to their importance in the trade. Any member may retire on giving two months notice.

Shortly stated, the procedure adopted is as follows:—All the cargo steamship owners pay into the Association account on the basis of $12\frac{1}{2}$ per cent. of their freight, and there is no chartering except an occasional sailing vessel in the event of the steam tonnage being insufficient for the requirements of the trade. The contributions to the Association are divided amongst the members according to their shares, and the cargo steamer owners have a pool among themselves. The Association has a fixed tariff of rates which applies to all cargo steamers. The mail steamers' rates are higher than this tariff (except for weight) and vary according to the demand for space. They can quote the same rates as the cargo steamers if they wish to do so, but it is understood that they will not quote less. The rates of freight are fixed by the “Rates Committee” of “Davis,” very often after

consultation with the "Merchants' Committee" in the Australian trade.

There is no Homeward Conference from Australia, but there are agreements in reference to the conveyance of the more valuable products, such as butter and fruit, which require refrigerated tonnage and rapid delivery.

The following table summarizes the rebates allowed to shippers and the periods applicable to the same :—

	Outwards.	Homewards.
India	10 per cent. 8 months in hand.	Calcutta.—5s. per ton on Tea, 8 months in hand or an equal discount in Cash to those who have signed the agreement. Colombo.—10 per cent. 8 months in hand.
China; Japan and Straits	10 per cent. 6 months in hand.	10 per cent. 8 months in hand.
Australia	10 per cent. 6 months in hand.	...

Taking, however, a wider view of the subject we find that the Conference organisation controls over half

the total trade and operates on all the ocean routes of the world. The following list* of the principal conferences together with the names of the countries to which their members belong will reveal their indifference to political frontiers, the all-pervading scope of their activities, the secret of their omnipotent strength :—

Principal Liner Conferences and Nationality of Companies
(*Alphabetical Order.*)

Europe—South Africa	British. Danish. German. Swedish.	Europe—South America (East Coast)	British. French. German. Italian. Spanish.
United States—South Africa	British.	Europe—West Indies and Islands	British. Danish. Dutch. French. German. Italian. Spanish.
India—South Africa			
Europe—Australasia & New Zealand.	British. French. German.		
Europe—Straits and Far East... ..	Austrian. British. Danish. Dutch. French. German. Italian. Japanese. Russian. Spanish.	Europe—South America (West Coast).	British. French. German. Italian.
		Europe—North America	Austrian. British. Sapishn. Dutch. French. German. Italian. Norwegian. Swedish. U. S. A.
Europe—India and Colombo	British. French. German. Japanese.		

Such is the general nature of the Shipping Conference. Its internal organisation depends upon the nature of the agreement between the members.

* J. A. Salter "Allied Shipping Control."

Where a Conference merely means, as on the Indian coast, an occasional consultation, generally by correspondence, when any rate changes are contemplated, it is unnecessary to maintain any definite organisation. A lower form of organisation is seen when a weaker line is content to follow the rates established by the predominant partner in the Conference; a higher form is represented by the informal meetings, regular or intermittent at which rates, sailings and other matters of mutual interest are arranged as in the Calcutta Homeward Conference. But the Shipping Conferences are sometimes formal organisations with a separate office manned with permanent officials and working through committees, regular meetings, rules, penalties, etc. This highly evolved type of a Conference organisation is shown by the Mediterranean Conference consisting of three groups of lines (1) British : Anchor and White Star (2) German : Hamburg-American, and North German Lloyd (3) Italian : Navigazione Generale Italiana, Italia, Veloce, Lloyd Italian, Lloyd Sahando and Sicola Americana. The affairs of the Conference are administered by a general secretary, an assistant secretary, a Board of arbitrators and a select Committee. The duties and powers of the permanent officials of the Conference are—

- (1) to receive the statistical statements and manifests and to examine them and the accounts, for which purpose they have access to the freight offices of the lines and

of the agents where they may examine books, manifests, correspondence, etc. ;

- (2) to communicate the statistics and accounts to the lines and act as mediator in general in the transactions between the lines;
- (3) to control the freight rates, commissions and rebates and to see that the lines receive regularly and at the same time all necessary statements;
- (4) to collect the payment of penalties and effect compensation accounts ;
- (5) to call meetings of the lines and to keep minutes of such meetings ;
- (6) to use every exertion to settle difficulties between the lines in an amicable fashion.*

Turning now to the objects of the Conference organisation, we find that the sole aim of the Conferences, whether plying their ships along the Indian coast or elsewhere, is to *prevent competition and to raise or maintain rates of freight.*

"Under the Deferred Rebate System," says the Minority Report of the Royal Commission on Shipping Rings "a number of Shipping Companies combine to secure a monopoly of a proportion of the shipping trade. They affect their object by undercutting their competitors (if any) in freights until they have driven

* This summary is taken from Mr. W. H. S. Steven's paper on "The Administration and Enforcement of Steamship Conferences and Agreements."

them away, and further by agreeing among themselves to charge the same rates of freight and to return a fixed percentage of all freight, after a certain lapse of time, to all "loyal" shippers, *i.e.*, those shippers who have not shipped any goods by steamers not belonging to the Ring. Matters are so arranged that the Shipping Companies always have a portion of the returnable freight in hand. Consequently the shipper can never free himself from the Ring, even if he can find a steamer, not belonging to the Ring, which is willing to carry his goods, except by submitting to a sacrifice. Unless a very large shipper, he cannot charter an entire vessel. He cannot, as a rule, afford to lose his rebates; and so in this way he is permanently tied to the Ring. Even if the rate of freight has been changed while the Deferred Rebate is in hand, the Conference claim to retain it if their customer ships by an outside steamer."

Strong in its monopoly, the Shipping Ring succeeds in securing the support of even the merchants to further its own ends. Not a few merchants are interested in the Conferences either directly as Principals or indirectly as Agents. Thus the British India Steam Navigation Co., Ltd., is represented at Rangoon and the Malabar ports by very influential commercial houses. These merchants are not merely naturally unwilling to oppose the Rings, but would also utilise their local influence to prevent any organization of the forces antagonistic to the Shipping Conference.

Complaints regarding the operation and the effects of the Deferred Rebates have been made by shippers before the Imperial Shipping Committee whose report upon the system has recently been published by the Government of India. Broadly, the main contention of the complainants is that the system enables steamship Conferences to maintain a monopoly and to set limitations to the shippers' freedom of action. They point out that the ship-owners, in a Conference, tie their customers to them by means of the rebate and are thus enabled to *render it difficult for any other ship-owner to start a service in their particular trade*, and to prevent a shipper, through fear of the forfeiture of his accrued rebates, from taking advantage of any more favourable opportunity of shipment which may occur outside the regular lines. Thus, in effect, they maintain that the ship-owners are able to achieve a monopoly through which they can unduly press on their shippers.

A similar complaint has been made by the Government of the Commonwealth of Australia. The Government contends that by means of the Rebate System the lines comprised in the outward trade to Australia from the United Kingdom prevent shippers from taking advantage of the service of the Government Line in the outward trade or, in other words, that the Conference has created a monopoly which it seeks to maintain to the exclusion of the Government Line.

It is sometimes argued that the companies forming the Conferences compete amongst themselves.

How small is the scope for competition will be clear from the fact that the most important item of freight is fixed and outside the limit of competition. Even before the Royal Commission on Shipping Rings, the ship-owners, when confronted with this question, could only say "the companies may however compete in quicker delivery and greater civility" !

It may further be objected that if the monopoly is almost absolute, why is it that the Conference Companies do not charge any freights, however high, or impose any conditions, however harsh, on the trade. That the rates charged by the Shipping Conferences operating the Deferred Rebate System, are relatively high as compared with those charged by Shipping Companies operating in a free market, will be seen at a glance from the following table submitted to the Imperial Shipping Committee.

The figures compare the rates to the United Kingdom from Bombay where no Rebate System exists and from Calcutta where it has been introduced since May, 1919 :—

		<i>Bombay.</i>	<i>Calcutta.</i>
1st December, 1920	... 56s.	3d.*	115s.
15th December, 1920	... 43s.	9d.*	115s.
3rd January, 1921	... 31s.	3d.*	85s.
15th January, 1921	... 31s.	3d.	70s.
1st February, 1921	... 31s.	3d.	70s.
15th February, 1921	... 31s.	3d.	55s.
1st March, 1921	... 31s.	3d.	55s.

* The actual quoted freights are 45s., 35s., 25s., but these relate to the ton of 16 cwts. or 40 cubic feet, and they have therefore been increased by 25 per cent to equate them with the Calcutta freights on the basis of 20 cwts. or 50 cubic feet to the ton.

The voyage from Bombay takes four weeks as against five weeks from Calcutta, and therefore it is urged that the Calcutta rate should only exceed the Bombay rate, which was regarded as being governed by the world freight market, by only a quarter, quite apart from terminals. The pre-war rates, in the absence of the Conference were 15s. from Bombay and 20s. from Calcutta.

But a monopolist, whatever his strength, has his limitations and like a ruling tyrant must sport, in his own interests, the role of a benevolent despot. That is the key to the character of a Shipping Ring. If the conditions imposed were wholly unreasonable and the monopoly were systematically and grossly abused, the general public could, and no doubt would, eventually combine against the ring and put an end to it either by establishing rival steamers or invoking the aid of legislation. But the persons immediately affected are the merchants who buy goods in one centre and sell them in another and they can generally readily adjust their dealings to suit the rates of freight and in this way transfer the direct loss from excessive rates of freight to the producer or the consumer. Moreover, they are often rivals in trade and their interests are divergent. They cannot readily combine for such a purpose as the raising of capital to build and work a line of steamers. Were a competing line established, however, the existing companies would do their best to harrass and drive off the new line by lowering,

temporarily, their rates of freight; and it is also probable that the persons who had raised the money to build up the new line or those who had subsequently purchased shares in the new company, would very soon find it to their advantage to join the Shipping Ring. The producers and consumers, who are really more interested in the question than the merchants, are affected only indirectly and as a whole, and they have very little power of combination for such a purpose as meeting and counteracting the combination of Shipping Rings.

Having studied the anti-social character of the shipping monopoly, based upon the Deferred Rebates let us now turn to its advantages, if any. The advocates of the system of Shipping Rings and Deferred Rebates argue that it is positively advantageous to the community as compared with the system of unrestricted competition. The chief advantages which they claim for it are :—

REGULAR SAILINGS.

If, however, we take world shipping as a whole and particularly the dates when the system of Deferred Rebates was adopted in the different trades, we find that not merely was there a sufficiently large number of steamers to guarantee regular sailings in the previous period, but that the very commencement of the Shipping Rings dates from the years which saw the unexpected excess of tonnage resulting either from the over-

building of ships or the increased carrying capacity and efficiency of individual vessels. The history of mechanical and other inventions which increased the efficiency of steam navigation shows that they were the causes and not the results of the establishment of Shipping Conferences. Even the most zealous supporters of the Shipping Rings, appearing before the Royal Commission, were not able to show that regular sailings were unknown before the Shipping Rings were organized. Whatever little evidence that has been put before the Commission on this matter goes to prove that in the case of certain ports, such as Colombo and Singapore, the services were as good and regular, before the introduction of the Deferred Rebate System, as they have been since.

Cases may, however, exist in which a monopoly is essential to secure a regular service. Such cases are—

- (1) Where trade is very small ;
- (2) Where the trade is irregular, intermittent or seasonal ; and
- (3) Where it is desirable to keep open an unprofitable trade route. (It may here be noted in passing that the opening of a new trade route is usually the work of the "Tramp" and that once the route is found to be profitable the ring with its organization comes along to oust the pioneer).

But even in these three cases, it is preferable to meet the particular circumstances of the trade by means of well-regulated subsidies if the evils of the Conference and the Deferred Rebate System are to be avoided. As a matter of fact, however, such services do not attract the Conference steamers who are content to amass fortunes on busy trade routes, leaving the irregular trades to the Tramp.

To prove the hollowness of the argument that the Conference System enables regular sailings to be maintained, attention may be drawn to the United States of America, a country in which shipping combinations, like others, are declared illegal. There is, however, not the slightest evidence—certainly none was put before the Royal Commission—to show that that country consequently suffers in its trade from the want of a regular service of steamers either in its coastal trade or in the Atlantic or the Pacific trade or in the trade between North and South America. What is true of the United States would be equally true of India, if opportunities were provided for new shipping concerns to participate freely in the carrying trade of the country.

As a matter of fact, witnesses examined by the Imperial Shipping Committee have stated that *the Rebate System was not necessary in order to maintain a regular, frequent and efficient service*. Such a service, to give Indian examples only, had been

supplied in the Calcutta Homeward trade until 1919 and still obtains as regards Bombay, without any such system. Moreover, a regular, frequent and efficient service is maintained by the Ellerman-Bucknall line between India and America without any Rebate System, which is illegal under American Law. This service is regularly supported by the shippers who are satisfied with it and with the rates.

Strange as it may seem, at first sight, the existence of the Shipping Rings results, as a matter of fact, in the available tonnage being reduced as new competing lines are not allowed to be started. As to regularity even, the services provided by the Conferences are very regular only when they are bound by mail contracts. It is, otherwise, not unusual even for them to blank sailings when a sufficient cargo is not forthcoming. Merchants at all the Indian ports could give many an example of such procedure by the existing Conference Companies. When regular sailings are provided, they are the results not of the Conference System, but of the demands made by modern trade, which, there is reason to believe, will insist upon and get regular sailings even if all the Conferences in the world were abolished altogether.

It is, moreover, worthy of notice that the much vaunted regularity of service, in practice, usually means regularity between certain large ports only and either the entire cessation of services to other ports or the inconvenience and expense of effecting tranship-

ment at the ports of call. One of the reasons why the minor ports on the Indian coast remain undeveloped is that the monopolistic Shipping Conference can best earn huge profits by serving only the chief ports of India. The present backwardness of a large number of the ports in this country is a very strong argument in favour of small local shipping enterprises whose activities have so far been thwarted by the monopolistic combine.

STABLE RATES OF FREIGHT.

It is sometimes pointed out, as one of the main advantages of the Conference System, that it enables stable rates of freights to be maintained. Such a prevention of frequent fluctuations in freight-rates is, no doubt, very useful to the merchant who, however, has to pay a price for such stability. For example, in times of serious depression it may happen that prices and wages fall and there is abundant tonnage to lift the small quantities of commodities that change hands. However, the freight-rate remains fixed at its normal level and the merchant loses the benefit which would have been his, had the ordinary economic law of demand and supply prevailed. It should, moreover, be remembered that *the normal freight is always fixed by the ship-owner to safeguard his own profits.*

As an illustration of the adverse effects of the Conference system upon the rates of freight, we may note that in the Frozen Meat Trade from New Zealand

to the United Kingdom, while under the Homeward trade, without a rebate, the rate continuously fell from 1886 to 1906, under the Outward trade, with the Rebate system, there occurred constant rises and falls. This provides a very good reply to the Conference argument that under the Rebate system the rates of freight remain stable. Yes! to provide higher earnings to the ships, as the following example will show.

For a long time in the whole Australian trade the ship-owners' Conference was in the habit of charging an average of 2s.-6d. per ton more, for the nearer port of Melbourne, than for the farther port of Sydney. It seems that this sur-charge on Melbourne port was a survival of the times when Melbourne was a port difficult of access, without the natural advantages of Sydney, but with the new constructions of Docks, etc., at Melbourne, the port was as good to work for as Sydney and it was only when the Australasian Merchant Association took up the matter very strongly with the Conference in April of 1907, that this discriminatory rate was removed. All the same the ship-owners did not miss the opportunity of arguing that Melbourne being an intermediate port they grudged every hour's delay because they want every hour available at the terminal port, Sydney, to overhaul the machinery!

PROVISION OF HIGH-CLASS STEAMERS.

It is, no doubt, true that the ships run by the Conferences are as a rule high-class vessels with good

speed but similar vessels were running before the Shipping Rings came into existence and run *even to-day in those trades which are not hampered by the activities of the Conference*. It has already been pointed out that the best vessels are those provided for the Atlantic trade which is unfettered by the Conference System.

UNIFORM RATES OF FREIGHT.

It is claimed that under the Conference System ship-owners are enabled to charge the same rates to all shippers alike whether large or small. In other words, it is claimed that the system enables them to protect the "small man" from his more wealthy competitor. Uniform rates of freight, where they are maintained, doubtless provide an advantage to the small merchant and a disadvantage to the large merchant, because under a system of open competition the large merchant, dealing with large quantities, could probably ship his goods at lower rates of freight. This, however, is a custom prevailing in almost every branch of trade and business, and is not peculiar to the carrying of goods by sea. Under the competition system, too, the small man gets some compensations. He may sell his goods in a place where the bigger man does not compete with him, or he may get his goods through an agent who ships a large quantity at a time and gets a reduction of freight. In any case, the importance of this portion of the question is insignificant as compared with the interests at stake

when it is proposed that the most important portion of the shipping business of the world shall be carried on under a system of monopoly.

It is, moreover, argued that a Conference does not differentiate between the rich and the poor—the large and the small shipper. This indeed is, to a large extent, true. But it would be incorrect to infer that there cannot be equal treatment of all shippers in matters of freight if the Shipping Conference did not exist. Sir Stephen Demetriadi, giving evidence before the Imperial Shipping Committee on behalf of ten associations in the United Kingdom interested in the Indian trade, claimed that *in the Indian trade before the system of Deferred Rebates was introduced, there were equal rates for all shippers*, and although large shippers, by offering large quantities, could obtain a lower rate, this rate became an open rate to all and the small shipper benefitted as well.

Further, the uniformity claimed as an advantage of the Conference System, has not always been maintained. The Conference Lines give preference to Governments, Railways and Municipalities, though the members quote in their tenders, identical rates and, notwithstanding protests, to certain favoured merchants. In regard to certain classes of goods, the South African Conference have, in the past, violated the understanding that rates shall be uniform for all. The Shipping Rings are known to have given at the Straits Settlements special advantages to a

certain number of firms. It is an open secret that *in the coastal rice trade of Burma, preference is shown to large shippers in respect of (1) rate of rebate; (2) period of payment and (3) facility of shipment.*

Nor, is it correct to say, that there is always complete equality. Special terms are given for "large quantities" or "contract quantities," the amount of which is apparently left very much to the discretion of the managers. To the argument that the Conferences would, in their own interests, object to giving preferential terms only to certain customers or to certain ports, the answer is that in the past they have sometimes given such preferential rates; and there is no certainty that if at any time and place their monopoly is seriously threatened, they will maintain uniformity of rates of freight. They are under no legal obligation to give equality and the probability is that, if their monopoly is in danger, they will, if necessary, reduce their rates of freights, at certain points, for a longer or shorter period, in order to crush competition.

As a matter of fact many examples of such preferences and discrepancies could be culled from the history of the recent coasting trade of India. During September, 1921, when the Scindia Steam Navigation Company—an Indian concern—berthed a steamer at Moulmein for carrying sleepers to Calcutta at Rs. 17-8-0 net, the British India Steam Navigation Company, registered in England, and having a practical monopoly

of the coastal traffic of India, circulated a letter among the shippers at that port to the effect that it was prepared to supply them space for sleepers for Calcutta at Rs. 12-8-0 less 10% rebate, provided they gave an assurance in writing that they would not directly or indirectly support opposition steamers and that they would confine their shipments entirely to the steamers of the British India and the Asiatic Steam Navigation Companies, members of the Indian coastal conference. The shippers were also informed that if they adopted the proposal, their rebates which had been withheld owing to their supporting an Indian Company, will be paid after "good behaviour" for twelve months.

Further, during the middle of 1922, the British India Steam Navigation Company charged Rs. 9/- per ton of rice from Rangoon to Colombo while the rate for rice from Rangoon to Bombay was only Rs. 6/- the reason being that competition between the two companies had, by then, extended only to the Rangoon-Bombay run. Later, as the struggle grew in scope and extent, the British India Company reduced their rates of freight for almost all the Indian ports to not merely non-paying levels, but to much below the cost of working with a view to drive out the indigenous company from its rightful place in the Indian Seas.* It is a fruitful study in contrasts to realise that at the head of the Shipping Company which has successfully tried

* Since the above was written, an agreement has been signed by the two rival companies to charge the same rates of freight, along the coast of India.

in the past, and which has been trying its utmost even to-day, to stifle all Indian shipping enterprise is Lord Inchcape who, prompted by a strong sense of Imperial citizenship, did, even in old age, undertake a long voyage and an arduous task to save India from financial bankruptcy!

NO CARRIAGE ON SHIP'S ACCOUNT.

The remarks as to the alleged benefit of fixed rates of freight to the small merchant are, to a great extent, equally applicable in this case. The abstention of the ship-owners from carrying cargo on their own account may be of some slight advantage to merchants as a whole, but so far as it has any effect on the producer and consumer that effect is to their disadvantage. But we do not think that there is, as a rule, any substantial sacrifice on the part of ship-owners. The combination of the business of the merchant with that of the ship-owner is (except in the case of a few articles, such as coal and cement) so difficult and inconvenient that few ship-owners would, ordinarily, carry cargo to any appreciable extent on their own account.

Sir Stephen Demetriadi, questioned by the Imperial Shipping Committee as to the possibility of a reversion to the practice of shipment on owners' account in the event of the abolition of the Deferred Rebate System, replied that *the custom of abstaining from this practice would persist*; and stated that no attempt had been made to purchase cargo on ships

account in the Calcutta Homeward trade before the Rebate System was introduced in that trade. It may also be added that carriage of cargo on ship's account is unknown in the Bombay to U. K./Continent run though the trade from that port is not controlled by any Shipping Conference. At all events, the interests at stake in the carriage of goods on ship's account are insignificant when the shipping business of the world is proposed to be carried on by a system of monopolies.

ECONOMY IN COST OF SERVICE.

It is sometimes urged that the Deferred Rebate System enables the Conference Lines to effect economies in the cost of their services. But an examination of the facts will reveal the unsound character of this argument.

It is said that there is competition amongst the various members of the Conference. Attention has already been drawn to the limited scope of such competition and what little influence it has had, has resulted in the provision of uneconomic steamers too good for the particular trade they cater for, the unfortunate merchant having to bear the cost of such an uneconomic procedure. So far then as the community in general is concerned, the Conference System is economically injurious not only in that it provides a higher class of steamers than required, but also in that it attempts to squeeze out of existence the tramp steamers that admittedly form a very large percentage of the tonnage of the world.

Another instance of *the uneconomic nature of the Conference System* is provided by the inflation of tonnage to which it leads. As the Minority Report of the Royal Commission on Shipping Rings points out "The trade reserved for the liners of the Conference is not brought under one monopoly. It is divided into a number of local sections, each section being the subject of a separate monopoly.

"With a trade which fluctuates in magnitude from year to year, the supply of ships tends to increase to the extent which will enable it to deal with years of maximum trade and consequently it will be in excess in the lean years. When the trade is divided into two sections, each served by a separate class of steamers, the tendency will be to provide a maximum tonnage for each section and the aggregate of the two maxima will, as a rule, be in excess of the maximum that would be required if the whole trade were equally open to both classes of steamers.

"In the same way each Shipping Ring, having a monopoly of a particular section of the shipping trade, will be under a temptation to provide, and will generally provide, the number of steamers required for years of full trade in its own particular section, and will have more steamers than required for a year of lean trade in that section. The aggregate of the shipping maintained by all Shipping Rings will, therefore, exceed

the aggregate that would be necessary for the same trade under a system of free competition and there is consequent waste."

"To sum up then," in the words of the Report of the Imperial Shipping Committee, "regularity of service, stability of freights and equality of treatment, together with abstention from shipment on ship-owners' account, are the solid advantages which it is claimed by the ship-owners can only be secured by the existence of Conferences and the Rebate System or some equally effective tie. On the other hand, the shippers are not unanimous in agreeing that Conferences and their ties are a necessity without which the advantages could not continue."

These alleged advantages, it should be remembered, are all in the nature of only *voluntary gifts by the Shipping Companies and not given by them under any contract enforceable at law*, so that any or all of them may be withheld, without the shippers having any legal redress.

The burden, moreover, of the uneconomic nature of some of the activities of the shipping concerns falls upon the merchant. He perhaps succeeds in shifting it either to the producer or the consumer of the commodities he deals in. The burden on the community, however, is unquestionably there and can only be removed when free competition is allowed to exist in the business of shipping. Even the majority report

of the Royal Commission referred to above, though it does not approve of the abolition of the Conference is constrained to remark "It is sufficient for us to state that in our opinion the monopoly obtained by the Conferences using the system of Deferred Rebates has in certain cases enabled Conferences to make larger profits and to place rates on a higher level than they would, but for the system, have been able to do, or at the least to arrest a possible fall in profits or rates."

Moreover the evil effects of the Conference system upon the development of Indian Shipping have been many and have lasted long. The system is responsible for the practical non-existence of a national mercantile marine, in a country so eminently fitted for it; for the divergence of trades from their natural sea-ports to others more suited to the needs of the Conference; and for developing Indian commerce along lines calculated to benefit countries other than India.

Under the circumstances the lukewarm finding of the Imperial Shipping Committee

"that the Deferred Rebate System is plainly open to certain objections, and although the agreement system is equally open to objections, we recommend that it should be given to shippers as a running option" cannot be acceptable from the point of view of India.

The Imperial Shipping Committee has envisaged the whole subject of its inquiry practically from the view-point of the shippers. It is remarkable, however, that all the evidence put before the Committee from shippers interested in Indian trade, both inward and outward, was unanimously against the operation of the Deferred Rebates. The Calcutta Jute Fabrics Shippers' Association, the Baled Jute Shippers' Association, and the Calcutta Wheat and Seed Trade Association made a representation against the Rebate System as applying in the trades from India to United Kingdom, South Africa, the Plate and West Coast of South America and to China, Japan and Java. Besides, ten Trade Associations in the United Kingdom interested in the Indian trade made a joint representation against the Rebate System as obtaining in the Calcutta Homeward trade. However, the question—from the point of view of India to-day, the very important question—of the entry of a new line into a trade has been very cursorily treated by the Committee ; the two paragraphs dealing with the subject do not cover even one page of its Report. As the main unanimous report of the Indian Fiscal Commission points out "the system of shipping rebates is one of the strongest buttresses of monopoly," and the interests of Indian industry and commerce demand that such a monopoly should be abolished. *

* Precedents exist in various countries for details of which attention is drawn to the author's pamphlet "The Deferred Rebate System."

As a matter of fact the Imperial Shipping Committee themselves have come to the conclusion that "the Deferred Rebate System is plainly open to certain objections" from the point of view of the shippers; but the interests of the ship-owners had also to be considered—perhaps demanded a more sympathetic treatment in view of the dislocation arising from the losses incurred during the Great War. British Shippers are mostly restricted to the British Isles. British Ship-owners, however, have an international position and must be helped—if necessary by the state—to recover their old position because the material prosperity of Great Britain is largely dependent upon British Ship-owners. To safeguard their interests became, therefore, the duty of the Imperial Shipping Committee who casting about for a tie chanced upon the system of agreement which sounds more equitable than the Deferred Rebate which is wholly one-sided.

Let us now examine the Agreement System and the reasons why it was selected out of the various alternative ties to the Deferred Rebate System placed before the Imperial Shipping Committee. We find from the report that there are two alternatives suggested to the Committee :—

(1) PREFERENTIAL CONTRACTS.—It seems to have appeared to the Imperial Shipping Committee that the Preferential Contracts which were in operation in various trades before introduction of the Deferred Rebate System may now be usefully revived but the

ship-owners to whom reference was made state that they were reluctant to enter into such contracts *now* as they lead to trouble and jealousy but if a trade became "open," ship-owners would be compelled to adopt it to ensure regular support. An analysis of this statement will show that the ship-owners having got hold of a very useful instrument of monopolization were reluctant to give it up unless they were forced to do so. They would however willingly accept the tie of Preferential Contracts if their favourite Deferred Rebates was abolished by Law.

(2) THE AGREEMENT SYSTEM.—This system is in operation in the South African Trade. Its genesis however provides an excellent commentary upon the methods by which certain ship-owners circumvent wholesome legislation. The Deferred Rebate System prevailed in South Africa until it was declared illegal by Law. The ship-owners, not to be thus thwarted in their customary mode of controlling the freedom of the shipper, instituted the Agreement System as a tie in place of the Deferred Rebates now declared illegal. By this method in a way the pious intentions of the South African Legislatures have been evaded by the ship-owners interested in the African trade. The Agreement System should be regarded not as a preferable alternative to the Deferred Rebate System but a loophole by which the recognised intentions of the Legislature have been circumvented by interested parties. The requisite South African Law is called "The Post

Office Administration and Shipping Combination Discouragement Act" which, passed in 1911, was intended to deliver a flank attack upon the Deferred Rebate System through the medium of the mail contract. It provides that the Governor-General shall not enter into any Ocean Mail Contract with any person who gives any rebate upon condition of the exclusive shipment of goods by vessels of particular lines. The Shipping Companies that would have been brought under this Act set about evolving new ties to keep the shippers under proper control and through the South African Trades Association which seems to consist of large shippers from Great Britain who are interested in the South African Trade succeeded in getting signed an agreement which forms the prototype of the one recommended as optional by the Imperial Shipping Committee and which apparently meets the requirements of the South African Trade.

The main features of the Agreement as printed by the Imperial Shipping Committee in their Report may be summed up thus:—

- (a) It gives equality of rates and stability of freights to large and small shippers alike except that it does not apply to large parcels of cargo, not being merchants berth cargo and special rates for large parcels are quoted to mining companies, municipalities etc., without reference to the Trade Association.

(b) The Association regarded their support as contingent on the Lines carrying the goods at "reasonable rates." If they did not regard the rates as reasonable either there was to be arbitration or the signatory shipper can give six months' notice to terminate the Agreement. The Lines were bound to consult the Association before making any general alteration in rates, but could raise rate on particular commodities without notice. Be it noted that this leaves a considerable amount of latitude to the ship-owners who could enhance the freight rates upon particular commodities without notice and without the shipper having the right to complain or to seek arbitration. This apparently small concession would seem to turn the contract wholly in favour of the ship-owner. Besides, no check seems to have been proposed on the ship-owner charging higher rates on commodities by putting them in a higher class—an evil particularly evident in the South African Trade at the Time of the Royal Commission—the term in the Agreement would even seem to encourage this evil.

(c) In the event of competition offering lower rates, the Lines are bound to

protect the signatories, who may withdraw after 30 days' notice if they consider the protection inadequate. Recently foreign lines had started loading to South Africa, and had quoted low rates. The Conference had met their shippers by reductions in their Tariff rates on various classes of goods in order to meet foreign competition, and in addition allowed a temporary reduction in freights on other similar goods sent by boats loading, first of all within a week each way and now within a fortnight each way, of a boat sailing from the Continent.

It is worth remarking that the Agreement System has not evoked the enthusiasm of either the shippers or the ship-owners. Sir Allen Anderson in his evidence before the Imperial Shipping Committee stated that the South African Agreement System was in practice working not unsatisfactorily, but that it was not very popular with either side. He further added that it was cumbersome though he had not himself come across any concrete instances of objection to it. The general opinion among both the parties concerned would seem to be, particularly from the shippers' point of view, that of the two evils of the Deferred Rebate and the Agreement Systems, the latter, if practicable in all Trades, was less reprehensible in results.

It is further urged against the Agreement System that it would be more difficult to make the Agreement apply to all merchants generally unless they were organised in one body like the South African Trades Association. It is moreover argued that the efficacy of the system still remains to be demonstrated particularly so because the system was introduced during the war when there was practically no competition but since the war as a result of new competition from Foreign Steamship Lines difficulties have already arisen as a result of the low competitive freights fixed by the Foreign Steamship Lines.

It is further pointed out that the Agreement System, though practicable in a well organised trade like the one to South Africa controlled by a Central Association like the South African Trades Association with its membership mostly confined to men of British Race and Nationality, was bound to break down when applied to the unorganised foreign owners and shippers belonging to various nationalities without any cohesion or prospects of immediate concerted action.

Another difficulty in the application of the Agreement System is provided by Trades in which the volume of cargoes and the irregularity in their flow makes it impossible to prejudge their requirements. Such trades scattered in different lines can scarcely be brought under a system which presupposes for its successful operation the existence of central organisations capable of collective bargaining.

It is moreover possible that the Agreement System would lead to greater discrimination, more injurious in its effects, than the one which prevails under the Deferred Rebate System. If the contract is to run for a definite period the ship-owners will insist upon the right, conceded to every other trader of selecting the persons with whom and the occasions on which they enter into such contracts. It is easily seen how these factors will open up the possibility and strengthen the character of the discrimination which would then be practised by, the ship-owner against the offending shipper.

In view of the particular nature of the Agreement the ship-owner who is bound down for a definite period may well ask for guarantees from the shippers that their part of the bargain will be kept. Mere verbal or written assurances of good faith will not then be enough but monetary securities may be demanded, which will place the shipper in a more undesirable position than the one he occupies to-day.

Besides the Agreement system will open up new avenues of interference by the ship-owner into the private affairs of the shipper. As against the Rebate System under which the onus of proving that he has given his entire support to the Shipping Company is on the shipper, the contract system places the onus of proving that the shipper has not given his entire support to the Shipping Company upon the ship-owner who will be entitled to the inspection of all the books and papers of the shipper bearing on the point.

In view of the manifold disadvantages of the Agreement System mentioned above, it is difficult to say how it is an improvement upon the Deferred Rebate System. As a matter of fact it is impossible for any system which puts the shipper under a tie to take the place of the Deferred Rebate System without producing those evils which admittedly flow from any system which creates a partial monopoly for the benefit of the ship-owner by tying the shipper to a particular steamship line or a conference of various steamship lines. The evil lies in the tie and any recommendation which through its solicitude for the ship-owner tries to perpetuate the tie, call it the Deferred Rebate System or the Agreement System as we will, cannot erradicate the evils under which the trading community has for a long time been groaning.

Finally we may point out that opposition to the system of Deferred Rebates, which is the chief illustration of the tie principle, has made itself particularly prominent in those parts of the Empire which have set their hearts upon the development of a national merchant marine. South Africa, Australia and India have expressed themselves unmistakably in regard to that question. The Self Governing Dominions of the Empire such as South Africa and Australia have already legislated against this repressive system; in India, though public opinion as represented by the Indian Press and Indian Commercial Organisations has declared against it, the Government has so far remained

unmoved, with the result that at the Delhi Session of the Legislative Assembly in February 1923, Mr. T. V. Seshagiri Aiyar introduced a bill to abolish the Deferred Rebates and was offered promises of whole-hearted support by a large number of Indian Members of the Assembly.

We have so far been concerned with the direct evil effects of the shipping monopoly. But there is a case on record which shows that the evil may go much further.

Not merely do Shipping Conferences operate under a monopoly but sometimes they are themselves responsible for the creation of other monopolies which restrict the scope of business; for example in 1908, there was a "Baps Ring" in the Rangoon rice trade to Europe which was supported by the steamship conference. Its evolution is thus explained :

The steamship agents in Rangoon had the right to declare to the owners that they will themselves supply full cargoes for the homeward voyages of the steamers consigned to them; as they themselves happened to be important rice exporters, they often availed themselves of this privilege. Thus it came about that all traders, except those of the Baps Ring, who were in touch with the Conference, were refused space when perhaps they wanted it most. The ultimate consequence was that the rice trade between Rangoon and Liverpool and London was confined to the ring whose cabalistic

name is derived from the initials of the names of its members: Bullocks; Aracan Company; Pandorf (later Mohr Brothers) and Steels. Attempts were no doubt made to ship Rangoon rice to London and Liverpool *via* Calcutta, but as expected, failed and the four shippers' monopoly backed by the ship-owners continued to thrive. The system no doubt benefitted the ring but hampered the growth of the rice trade along desirable lines.

There is however one instance, in which the evil resulting from the selfish activities of the Conference recoiled upon its own heads. In the year 1881 the Bombay Conference consisting of the Peninsular and Oriental, Hall, Anchor and Clan lines, having for the time overcome all opposition, fixed upon a "through" rate, from Manchester to Bombay, of 40 shillings per ton with ten per cent primage. Under the circumstances, this rate was regarded as fair and reasonable, but after a time the Conference, at the instance of the Clan line, which meant to recoup its losses during the rate war that preceded its entry into the Conference, raised the rate to 60 shillings per ton. Outside steamers immediately appeared on the scene and quoted lower rates. The Conference retaliated by offering to return 35 s. out of the 60 shillings charged to all who supported their steamers and at the same time did not make any shipment by the opposition steamers.

Manchester shippers had not till now made any attempt to form a combination in opposition to the

Conference. Their past experience of a well-organised service together with the advantage of occasional outside steamers and low rates of freight was sufficient to warrant the continuance of the policy which left all such matters to regulate themselves or rather in practice to be regulated by the Ship-owners' Conference. Short-sighted as this policy was, the eyes of the Manchester shippers would not have been opened but by the united action taken in an altogether unexpected quarter. The Indian merchants of Bombay had not been idle spectators of what was happening in England. Under the indent system, which was then just coming into operation, the Bombay merchants used to order their supplies at fixed prices under indent. It, therefore, became a matter of some moment to them if, after they agreed to pay a price based upon a certain rate of freight, they learned that the Manchester supplier was receiving return of rebates varying in amounts according to circumstances. As a result of this knowledge, the Bombay merchants decided to secure the rebates for themselves. The combination of Indian merchants, however, was so little regarded as being possible that, on the reports of the new feeling being conveyed to England, the Manchester shippers began to get busy to arrange shipments by Conference lines only at a fixed rate of 40s. per ton for a given period. Before, however, a permanent agreement could be arrived at, the Bombay indenters formed themselves into a body called the Bombay Native Piecegoods Merchants'

Association. This new organisation immediately opened negotiations with outside steamship owners and placed their first freight contract for the conveyance of all Manchester indent goods at a through rate of 30s. per ton. The surprise felt at the foundation of the Association was deepened as years rolled on, because contrary to expectations the Association continued to grow in strength and influence.

CHAPTER VI.

SHIPPING INCOME.

PRINCIPLES AND PRACTICE

OF

RATE MAKING.

It is a well recognised principle of transport economics that distance is a relatively unimportant element in the fixing up of rates ; the opposite principle of a rigid distance tariff has been wholly given up by responsible authorities throughout the world. The latter though important, because practised on occasions, in the case of railways where distances are contiguous may be wholly dis-regarded in a study of shipping rates because, as a rule, no two important ports are situated within a 100 miles of each other. As a matter of fact along the coast of India, the first ports of call from, say, the terminal ports of Rangoon; and Bombay are situated at longer distances. Where, however, as in England, ports are close to each other, the rates quoted to and from them do not much vary. For imports particularly the same rates are quoted for all the ports of the United Kingdom. It is a logical derivation, a corrolary of the theory of joint cost discussed in the first chapter that the rates should be fixed upon various factors in which distance holds a very modest place. As Ripley says, "This theory justifies the classification of freight, namely, a wide

range of rates nicely adjusted to what the traffic in each particular commodity will bear while always allowing each to contribute something towards fixed and joint expenses." This theory explains why it is that while shipments of gold, silver and other costly articles are fixed on the basis of the percentage of the value of the metal, for example, on the Indian coast from about $\frac{1}{2}$ of 1% to 2%, on specie or the value of the precious metals shipped, on some commodities the rates charged are so low that they barely meet the expenses incurred wholly for the traffic that is served, as for example when tin ore was carried from the Straits Settlements to U. K. Cont., a distance of 10,000 miles, at a ballast rate per ton of 5/-, the approximate cost of loading and discharging the commodity. The Traffic Manager's reason for taking cargo even at this low rate is provided by the fact that such increment not only adds to gross revenue earned by the carrier, but at the same time it lightens the burden of the constant operating cost upon the remainder or the balance of the traffic.

Such ballast rates, however, cannot afford a basis upon which the daily shipping requirements of the world can be met. The shipping industry must thrive if the requisite capital is to be forthcoming in large amounts. The practical fixing of shipping rates should, therefore, depend upon a method which contributes in the end to the maintenance of the shipping industry, as a whole, in a state of efficiency.

In theory the rate for any service may be fixed with reference to—

- (1) The cost of the service to the agency which performs the work ;
- (2) The value of the service to the party that is benefitted by the work done ;
- (3) Both the cost and the value of the service *i.e.*, what the traffic can bear.

As regards the freight rates on commodities being fixed with reference to the cost of service, we may say at the outset with Sir William Acworth that “ such a basis is impossible as no one knows or can know what the cost of carriage is. To begin with, the phrase itself is ambiguous. Cost of carriage of a particular item may mean the additional cost of carrying that item : this is normally so small as to be negligible. It may mean the additional cost *plus* a fair share of the standing costs of the undertaking.” But the plus figure will have to be arbitrarily fixed.

* Rates for transportation by water should, therefore, provide for the cost, including depreciation, incurred in the carriage of goods or passengers *plus* a reasonable profit on the capital invested in the purchase and the running of the ships. It is particularly necessary to draw attention to the amount of capital invested in the ships because in lay circles it is sometimes believed, though erroneously, that the cost of transport means the operating expenses only—a result of confusion arising

from the ordinary meaning of the term "cost." The "cost of service" however includes interest on the capital invested, depreciation charges, operating expenses, reasonable profits, etc. This theory, no doubt, appeals particularly to the shippers who argue by analogy from the trade lines known to them in commercial circles. Whatever, however, the limitations of this theory, it provides a sound basis for the determination of minimum rates of freight. On the other hand, as we have seen before, transport being produced under joint cost, it is impossible to know precisely the costs of a particular transportation service. So much money is spent for the undertaking as a whole that it has but very little connection with the carriage of a particular commodity. A ship carries a large number of commodities in varying amounts for various distances and the traffic manager can only make his calculations on the basis of the whole of the gross receipts meeting the expenses of the continuous services rendered. Even if it were an easy matter, which it is not, for the manager to divide the total cost equally among the various articles carried and charge accordingly, it would mean an instantaneous stoppage of the trade in so many commodities because cheap articles, if they are to be marketed, could never pay the same rate of freight as would be charged to the higher-priced articles. It is not, therefore, desirable from the social point of view, to base the freight rates upon the cost of service as that would mean that small articles of

high value would pay less and bulky articles of great utility would have to pay more than they pay now, which would prove a great handicap to the industrial growth of the country. Cost of service, therefore, will prove, even if practicable, a very unsatisfactory basis for apportionment of the transport charges, the more so when it is remembered that the rates must be fixed in advance whilst the cost will be known even approximately long afterwards. Commercial competition, it is argued on the other hand, provides not merely the price at which the commodity will be sold but also the freight rate at which it can be transported to its market. It is, therefore, claimed that the rate of freight should be based upon the value of the service rendered by the carrier in the marketing of the commodity in question. The theoretical side of this question is well expressed by Prof. Taussig when he says, "Ability to stand the transportation charge is the test of the utility of the carriage." The main function of transport is to create place-values by facilitating the sale of articles, produced more advantageously in one place, in the market of another less propitiously situated. It thus furthers the geographical division of labour. It is principally an ancillary activity though the number of persons engaged therein is relatively large. In India alone the number of men engaged in transport by land is very considerable according to the statement of the Secretary of State in his memorial to the League of Nations regarding the industrial position

of India. The number of men engaged in sea transport must also be large if we reckon the skilled and unskilled operatives who build the vessel, the officers and crews on the vessels, the men in the offices of the shippers and the ship-owners, and the large number of men engaged in the services of the ports ; these in addition to those engaged in the construction and the operation of the railways and the main roads, will give us some idea of the huge number of men engaged not in the production of articles but in creating place values for them.

Particular emphasis has been laid upon this point because this theoretical treatment enables us to understand as to why it is that the provision of service *per se* and not the cost of such service plays such an important part in the determination of the rates of freight. As Ripley says, " The cost of each shipment is so largely joint and indeterminate and so large a part of the entire plant is indistinguishably devoted to the general production of transport without reference to particular units of business," that the total charges for transport should equal the total expense of providing the service *plus* interest on the capital engaged at the normal current rate, *i.e.*, the shipping manager has to fix his rates on various types of commodities on the principle of " what the traffic can bear."

Let us now apply these considerations to the transport of rice from Rangoon to, say, Bombay. As we have already seen the cost of service would fail to

prove a practical guide in assessing the rate to be charged for carriage of one ton of rice.

If however the value of the service principle is adopted, rates would be fixed with reference to the place value created by transport, *i.e.*, the value added to an article by being carried from one place to another. Rice, for example, has, a certain market value in Rangoon lower than what it has in Bombay and the excess in the price of rice in Bombay over the price of rice in Rangoon will indicate how much value transportation* has added to the commodity. But as the prices in the two markets vary from day to-day or even many times during a day, it is difficult to gauge the exact amount to be credited to transport. All that the traffic manager has therefore to do is to watch the effects of the rates upon the volume of the business done. If, other things being equal, an increase in rates reduces the quantities of rice sold, the rates are presumably higher than the market value of the service and should be reduced. In practice, this rate may be found by charging as high an amount as will just enable the article to be sold at a reasonable profit. Positive refusal on the part of the shipper, due to his inability to sell his wares profitably, will indicate to the shipping traffic manager the limit beyond which it will be futile to go. Thus if the price per

*It should be remembered, however, that as Prof. John M. Clark points out "the difference in price itself depends on the transportation charges,"

maund of cotton in Bombay is higher than in Tuticorin or Calicut, no freight charge will be paid which would wholly absorb all that increment of place value due to transportation. A reasonable margin of profit must be left to the shipper who buys cotton in Tuticorin to sell it in the competitive market of Bombay. This provides the practical test of charging what the traffic can bear. Men experienced in the daily work of transport regard this principle of charging what the traffic can bear as one of such everyday occurrence that some rash managers have gone to the length of saying that their guiding principle is to "impose on the traffic just as much as it will bear." A famous French manager is quoted by Prof. Acworth as declaring, "*Faites payer au trafic tout ce qu' il peut payer ; tout autre principe est un nonsens.*" Equally dictatorial have been the pronouncements of many American managers with the result that a well-known principle of applied economics* has come to be regarded by many as the sinister talk of interested parties. Rightly understood, however, the principle is merely an application, to transport economics, of the modern canon of taxation which enunciates not an equality of payment, but an equality of burden or sacrifice. As Prof. Acworth puts it, "Can any system of apportionment of this necessary expenditure be more

* Prof. Acworth has devoted a whole chapter of his "Elements of Railway Economics" to establishing the justification for charging what the traffic will bear by a careful analysis of various analogies drawn from various trades, professions, private and public undertakings.

equitable than one under which the rich—well-to-do passengers, valuable freight, traffic with the advantage of geographical situation close to the markets, and the like—contribute of their abundance; while the poor—third class passengers, bulky articles of small value, traffic that has to travel far to find the market, and so forth—are let off lightly on the ground of their poverty? Translated into railway language, the principle means this: the total railway revenue is made up of rates which, in the case of traffic unable to bear a high rate, are so low as to cover hardly more than actual out-of-pocket expenses; which, in the case of medium-class traffic, cover both out-of-pocket expenses and a proportionate part of the unapportioned cost; and which finally, in the case of high-class traffic, after covering that traffic's own out-of-pocket expenses, leaves a large and disproportionate surplus available as a contribution towards the unapportioned expenses of the low-class traffic, which such traffic itself could not afford to bear."

Strong support is lent to this view by the finding of the Inter-State Commerce Commission of the United States of America who, in their first annual report as early as 1887, wrote: "If these transport agencies of commerce were to accomplish the greatest practicable good, the charges for the transportation of different articles of freight could not be apportioned among such articles by reference to the cost of transporting them severally; for this, if the apportionment

of cost were possible, would restrict within very narrow limits the commerce in articles whose bulk or weight was large as compared with their value. On the system of apportioning the charges strictly to the cost, some kinds of commerce, which have been useful to the country, and have tended greatly to bring its different sections into more intimate business and social relations, could never have grown to any considerable magnitude, and in some cases could not have existed at all, for the simple reason that the value at the place of delivery would not equal the purchase price with the transportation added." It follows, therefore, that commodities should pay freight rates as high as they can economically bear.

Under this policy of charging "what the traffic will bear," may be included the basing of the transportation charges not upon the place-values thus created but upon the intrinsic value of the commodities shipped. It would be theoretically possible to construct a schedule of shipping rates by fixing the charges neither according to the cost nor value of service, but primarily according to the absolute and relative values of the commodities carried. This theory underlies the policy of charging higher rates upon valuable commodities than those of less worth. It is beneficial to trade and really harmful to none that ivory exported from Burma should pay a higher rate of freight than rice. The carrier is thus enabled to increase his gross receipts and consequently charge less upon such essentials as rice and foodstuffs.

The principle is, moreover, capable of a much wider application. Not always is the maxim strictly interpreted to mean "charging what the traffic can be made to bear"; sometimes it is softened down to mean "charging what the traffic is able to bear." It is because of the not uncommon practice of the latter definition that many businesses are carried on to-day; for example, the large shipments of manganese ore from Bombay and Marmagoa to the United Kingdom are directly due to the fact that the ship-owner is content to charge a low rate of freight, usually between 20 to 25 shillings, because the steel manufacturer cannot afford to pay a higher rate. Similarly old iron shipped from Bombay to Genoa generally pays only about 25/- though its loading is very slow work. It should, of course, be remembered that both these commodities provide very good ballast for the steamer.

It will be seen that in the above statement distance plays a secondary part, yet the length over which the commodity is carried forms an important factor affecting the cost of service; due importance should, therefore, be given to that factor by the traffic manager who would make profit out of the shipping industry.

The traffic manager does not, however, consciously endeavour to follow any one or all of these theories of charging freight rates but is guided by the useful facts of the market which come to him daily almost hourly. He studies the traffic and charges

what the traffic will bear. Unable, even though willing, to guide his actions by the cost of service, afraid to charge the maximum rate based on value of service lest business may be lost altogether, unwilling to charge the minimum rate on each article based on the cost of service lest loss should result in spite of a full ship, the traffic manager decides to charge what the traffic will bear. Sound judgment rather than scientific adjustment rules the action of the shipping man. It is thus only that profit to the carrier may be combined with the development of the business catered for, which means more profit and so on; in fact he wishes to benefit by the law of increasing returns operating in shipping as it works in various other branches of economic activity.

A just or a reasonable rate of shipping freight is not so vague as it may at first sight appear. Though a scientifically precise rate cannot be arrived at, it is possible to charge a reasonable rate that will appeal to the shippers and be profitable to the ship-owners. Reasonable rates, according to Prof. Taussig should not be, generally speaking, higher than will suffice to yield a normal return on the capital invested, a "normal" return being understood to include not only interest, but something in addition, by way of compensation for risk and judgment, *i.e.*, profit. The adoption of such a practice by law is illustrated by the enactment of the American Inter-state Commerce Act of 1887 that railway rates will be "reasonable."

To quote an instance nearer home Clause X of the Bill introduced by Mr. T. V. Seshagiri Aiyar in the Indian Legislative Assembly to provide for the prevention of the Deferred Rebates and for the prevention of rate wars and resort to retaliatory or discriminating practices in the coastal traffic of India reads : —

“ Whenever the Governor-General in Council finds that any rate or fare is unjust or unreasonable, he may determine, prescribe and order the enforcement of a just and *reasonable* maximum and minimum scale of rates and fares.”

Turning now from the general principles to the method of rate-making, the subject is well summed up by Pro. Ripley when he says “ the task of constructing a freight or passenger tariff is an eminently practical one. The process must be tentative and experimental. Little can be calculated in advance. Tariffs are not made out of hand ; they grow. Not until a rate has been put into effect, can its results be known.” The lower-limit of charges, however, is more or less fixed by the cost of the service rendered. Obviously the rate cannot be less than that portion of the variable expenses incident at least to the loading and unloading of each particular unit of business. Along the Indian coast the terminal outlay for loading and unloading may be taken at an average figure of about eight annas per ton at each end of the line ; that is to say, at an average of about five to ten per cent of the freight rate as the case may be. Just where, above or below this average,

the figure for any particular tariff will lie, depends upon a multitude of details. This terminal expense is obviously quite independent of the length of the haul. It costs no more to load for a carriage of rice from Rangoon to Bombay, 2,000 miles, than to Barua, 800 miles. The movement expense, however, varies directly with the distance. The steaming to Bombay will exceed that to Barua by about eight days which means added cost of bunkers, upkeep, etc. The movement expense, apart from the initial cost of getting up steam in order to move at all, rises proportionately to the distance traversed. Reverting, however, to the terminal expenditure of loading and discharging the cargo it is easily seen that the shipping company could not afford to charge rates based merely upon this one item of expenditure which forms one of the many factors influencing the scientific fixing of rates.

The making of rates is well illustrated by the graph on the page opposite. It represents the fair-season rates of freight on full-pressed cotton carried from Bombay to various Indian ports. Cotton has been selected for illustrative purposes because, paradoxical as it may seem, not much quantity of that material is sent out from Bombay by sea. During 1921-22, which may be taken as a representative year, there were despatched from Bombay, 236 tons of cotton to ports within the province, 1,625 tons to Bengal, 698 tons to Madras, 63 tons to other provinces, 3,348 tons to various non-British Indian ports, totalling 5,970 tons per year. The amount

of cotton being thus restricted, it is not likely that the ship-owner will try to levy a high rate upon it because the earnings would not be much affected even by charging high rates rendered possible by the monopoly which guarantees that, on the other hand, a rate lower than the cost of service will not be charged. Moreover, in this graph the rates from Bombay are given because for all practical purposes it may be regarded as a port of discharge; anyhow it never provides full cargoes for coastal ports. It may, therefore, be presumed that the steamers are keen to return to Calcutta or Rangoon where full cargoes of coal and rice respectively may be had. During the busy rice season in Burma, the traffic manager is anxious to turn the ships round to Rangoon, Akyab or Bassein as swiftly as possible. The rate, therefore, charged from Bombay would be a low one indeed. If just the cost and a little more could be realised, the cargo would be taken if undue delay is not likely to result from doing so.

The Cotton rate from Bombay would, therefore, represent almost the cost of running a steamer from Bombay to Rangoon if active competition were prevailing along the Indian coast. But even as matters stand, the rate, including profit, gives us some idea of the cost of operation which in the graph is represented by the parallelogram A. B. C. D.

Moreover, the graph illustrates various features characteristic of rate-making in practice. The first

principle guiding the traffic manager should be to reach the normal rate of freight as quickly as possible, any future changes to take only the upward direction. Of course, if conditions of full competition prevailed, it would be necessary to cut the rates at those points where competitive lines met. But this eventuality rarely occurs on the Indian coast. Occasionally, no doubt, an American or a Dutch steamer engaged in ocean trade may, in slack times, arrive with sugar from Java for Indian ports and instead of going direct to South Africa in ballast to load Natal coal, carry rice from Rangoon or coal from Calcutta to Colombo at a rate much lower than the one demanded by the monopolistic combine; but such occasions are rare, as normally an ocean steamer could ill afford to spend her time taking cargo to local intermediate ports. A much stronger deterrent is however provided by the fear of retaliation by the aggrieved party along the lines specially catered for by the new rival; for example, it is the fear of the British India line competing with the Japanese lines along other routes that keeps the latter companies away from the Indian coast. It is as a result of the practical monopoly thus realised that the graph does not indicate any sharp falls at competitive points because there is no competition in the coastal trade of India.

Having, therefore, reached at the very first port the normal figure which leaves a handsome profit, the traffic manager is content to charge the same figure Rs. 12 for the first seven hundred miles, about one-

third the total distance to Rangoon. At Tuticorin, however, the factor of distance comes into play and the rates goes up to Rs. 14 the same figure ruling at Colombo which though a hundred miles more distant is a port of call for oceanic steamers, which fact prevents the rate from going up. Had there been no monopoly, however, as said before, the rate at this competitive point would have gone down instead of remaining stationary. At Galle, however, only a few miles beyond, the rate jumps up to the highest point Rs. 24 descending a little at Cuddalore to Rs. 20 owing to its close proximity to Madras which, being an ocean port, pays only Rs. 12 for over 1,400 miles, the rate being the same as charged for the first six hundred miles. Beyond Madras, however, the rate rises to Rs. 16 for Cocanada gently declining to Rs. 15 for Rangoon, a distance of over 2,100 miles from the port of loading.

It will be observed that the rates at Galle and Cuddalore seem unduly high, but, from the point of view of the shipping manager, they are easily accounted for by the fact that not merely has the ship to pay extra dues and incur expenditure through time spent in discharging the cargo but that there may be no other cargo to discharge or to load which might otherwise reduce the additional expenditure incurred by calling at the port.

The case of the main ports is, however, different. Not merely do they normally provide various types of

cargo to load, but they belong to a class apart as they stand on the main routes of world commerce ; for example, Bombay being usually the first Indian port of discharge for steamers from U. K. Continent, its rates of freight to other Indian ports touched by European steamers deserve attention. In England, the same rates are quoted for the chief Indian ports at which the ocean steamers call. It is, therefore, necessary that the rates from Bombay to these ports should be relatively low and approximately the same which is seen by a study of the graph. Besides, these chief ports being themselves important centres of inland distribution have to be encouraged in the interests of the shipping companies themselves.

This treatment of the subject demonstrates why even under the very simplest conditions a straight mileage tariff is unscientific and unreasonable, for the running expenses, spread evenly over the growing mileage traversed, are progressively reduced according to the maxim, the longer the haul, the lower the ton-mile cost.

As a rule, therefore, the current rate of freight on a commodity will be one that yields profit. Exceptions are, however, sometimes made in cases of shipments to important ports and a much lower than the ruling rate quoted in order to take the business irrespective of its paying character. An entirely new principle, then, comes into play. Adopting Hadley's phraseology in connection with railways : if you take at

eleven cents freight that costs you twenty-five cents to handle, you lose fourteen cents on every ton you carry. If you refuse to take it at that rate, you lose fifteen cents* on every ton you do NOT carry, for your charges for interest and repairs run on. The rate must, therefore, be cut; if not to make a profit, at least to stop a greater loss. The lowered rate may, however, so stimulate new business and enlarge the volume of traffic, that it may be handled at much lower cost. In fact, this consideration alone, in the absence of all competitions, may induce a lowering of rates at certain points out of line with the general schedule. This incentive, conditioned by the Law of Increasing Returns, is always present in the mind of the transport manager.

Cutting the normal rate at competitive points or at important points in order to stimulate traffic, in conformity with the principle above stated, gives the peculiar character to our tariff diagram which indicates lower charges for longer distances. For these ports the tariff is fixed at a lower point determined not primarily by, yet keeping close to, the cost of service, but by the available demand. Traffic at these points is charged not as much but as little as it will bear; which, being translated into practice, means that the charge is set as high as possible, still holding the volume of business constant, or even increasing it if

* A fifteen cent rate is regarded adequate to meet interest and repair charges.

that can be accomplished. The total profit is constituted of the profit per unit of freight multiplied by its volume. The centre of interest is here shifted from the average profit per unit considered alone, to the total profit thus obtained.

These changes in rates at competitive points are usually accompanied with transition to a new level of rates determined by the conditions at the next competitive point beyond as at Cuddalore in our graph.

An important fact concerning this tariff thus far developed, is that of course, the height of the upper level at the most remote point must never exceed what the particular tariff will bear. In other words, supposing that the traffic consisted of grain or coal, not more than a certain amount could ever be charged, no matter how great the distance, without so far diminishing the profit in the transaction as to render the business impossible. As ocean transport brings together ports which are not contiguous to each other, a fundamental difference distinguishes it from railway transport, which simultaneously with bringing, say, Bombay and Calcutta together also brings together two places divided from each other sometimes only by a boundary line. If the rail rates are high the goods may be sent by road. The sea transport has, as a rule, no such rival and therefore we do not find in shipping rates those gradual rises which are so characteristic of the railway.

There are not likely to be more than two ports within say a hundred miles of each other and

allowing for clusters of ports as on the Malabar Coast, sometimes within even 500 miles, so that goods are sent by sea because they must be so sent and a market could exist only if the shipping rates are paid. Though this does not mean that the ship-owner can go on raising his rates, it leaves him a very wide margin of which he makes the utmost use. This difference between rail and sea transport must be noted. Taking the shipments from Rangoon, we find that each commodity, mentioned in the attached graph, rice, timber, seeds or general cargo, having attained a certain level of rates, never rises thereafter, no matter what the distance. Each attains the maximum of what it will bear. That level it can never exceed. This immediately leads to another consideration. No single rate is applicable to any large number of commodities. Each one must be regarded as a law unto itself. Not only does the ultimate amount which each is able to bear depend upon the value of that commodity, but also upon the conditions, determining competition with respect to it, and consequently varying all along the line.

Thus it is that the height of the extreme upper-level in our diagrammatic series of rates is fixed by the highest charge which that particular traffic will bear. Beyond a certain point, however, no matter how great the distance, the rate cannot be increased. This maximum varies, of course, with each commodity. The problem of the traffic manager is to attain this

highest rate as speedily as possible with increasing distance, and to grade his rates with distance upto this level as quickly as possible, consistent, of course, with the maintenance of a full volume of business. Not only, however, is the final limit of what the traffic will bear different for each commodity, but the steps or stages by which the rate progresses upto this maximum are quite independently determined.

Rates on commodities are moreover conditioned by various considerations. A new market could be created by reasonably low rates to enable the manufacturer to meet the foreign competition, perhaps even dumping. The sale of Porbander cement in the Madras and Rangoon markets depends upon the rates of freight to these ports. The weight and value of goods also shape the freights they are charged, for example, a cheap heavy commodity like coal cannot pay the rate of a dear heavy commodity like timber. Furthermore, high terminal charges for handling certain classes of goods have to be considered as in the case of engine shipments. Wherever they are high, the rate must rise at once sufficiently to cover these, no matter how short the distance; but thereafter the rate need not increase for that particular purpose. Besides, when steamers are wanted at a port in an emergency, very low rates would be accepted just sufficient to meet, say, the steaming expenses. Thus if there is a coal strike in Wales, plenty of steamers would run up to South Africa from the

Mediterranean sea and from even the Indian ocean in order to load Natal coal.

Few generalizations in this connection are, however, possible because most would require modifications. Rate making is a matter of infinite detail. It is generally true, however, that beyond a certain point the tariff on different grades of commodities will separate more and more widely with increasing distance. This feature is well brought out by the Rangoon to Bombay graph which indicates the early closeness of the four lines characterised later by wide separation as the distance from the starting point increases. For, obviously, after the low-grade goods have reached the maximum which they can bear—and this they tend to do speedily—they must remain practically constant; while those of higher grade continue progressively rising. And for short distances the rate on the low-grade goods may even exceed that imposed upon higher-class tonnage, as for example in our graph, cotton seeds pay more for Calcutta than teak timber though the later commodity pays the higher rate at all subsequent ports except at Calicut where the rate is reduced to enable the Rangoon merchants to meet the local competition from Malabar timber. Long experience on the part of the carriers has, however, enabled them to arrange their tonnage in classes for each of which the conditions are more or less uniform.

The foregoing description of the development of a freight tariff is applicable to only that part of the traffic

which is not subject to competition. For the markets in which the tramp steamers are carriers, the making of the freight rates in practice is an extremely complicated matter. No single line is independent of rates made by its rivals—rates applicable not only to competing commodities and markets, but also as affected by apparently the most remote and disconnected contingencies. In order to understand this it will be necessary to describe somewhat in detail the nature of competition as applied to transportation; and then to show by a few concrete illustrations, the various factors which actively enter into the determination of specific rates. Laymen and legislators do not sufficiently appreciate the extremely delicate nature of the work. Much discussion relative to transport competition seems to be based upon the assumption that it consists in the main of the competition of lines more or less parallel or else operating under substantially like conditions. As a matter of fact competition in transportation is to a large degree far more complex.

Transport competition is of three entirely distinct sorts. These may be denominated, respectively, competition of lines, competition in facilities and competition of markets. The first of these, competition of lines, as the name suggests, is limited to the activities of the carriers alone. The rivalry is direct and physical. The only competition possible is that concerning the ship by which traffic may move between two points. Such competition naturally arises

between lines that send their steamers to and from the same ports of origin and destination. But this is merely theoretical because the competition lasts only for a short space of time. The same sort of simple competition prevails, of course, between a steam line and a railway line between two ports Calcutta and Madras or between a port and an inland town as when wheat flour from Lahore could go to Tuticorin by sea via Karachi or all the way by rail which provides a cheaper route when sea-freights are high. Such simple competition as this, where confined to steamships alone, almost inevitably leads to one of two results: the lines may remain independent, preventing ruinous rate wars by forming a conference or else, as a result of long continued cut-throat competition, the bankrupt line may be wholly destroyed or bought up by the powerful rival. The disappearance of many Indian shipping companies, as also the preliminary rumoured offers of purchase of the Scindia Company by the B. I. Company before the two arrived at an agreement, would amply illustrate these points.

Competition of facilities, the second of the three phases of competition above mentioned, deals, as its name implies, not at all with the rates charged but with the facilities or conveniences afforded.

Instances of competition of facilities are provided by promptness in settling claims, efforts not to shut out cargo, sailing of steamers according to programme, etc., in the cargo business and the provision of palatial

steamers in the Atlantic trade travelling at a very fast speed, which cannot possibly be economical, may be regarded as further examples of the same fact in the passenger trade. Though high sounding, competition of facilities forms a trivial part of the business of shipping though prominence was given to it by the witnesses who supported the system of shipping conferences before the Royal Commission of 1908. Such competition is confined solely to rivalry for business at the established rates. Immediately on the appearance of any departure from these conditions the question becomes one of competition of either of the other two sorts.

Such facilities, however, as might have a distinct money value, as, for instance, free storage of luggage and provision of free food during a rate-war which practically amounts to giving something for nothing are, of course, equivalent to a reduction of the rate; and do not belong to this class of considerations at all. Only those conveniences or facilities, which, while attempting to secure business may not be compounded for money, should be classified in this group.

The third form of competition in transportation is dependent upon the competition of markets; and is not, in reality, direct competition between carriers at all. This is the most difficult of all forms to understand. Although indirect and often obscure

it is of fundamental and conclusive importance in the determination of freight rates. Commercial competition deals not with a mere choice of routes but with alternative markets. The carriers act, not independently and of their own volition, but only as agents or representatives for their constituents, the shippers. They may become tools or weapons in the hands of merchants or manufacturers who are the real contestants. It is largely in this sense that it is so often alleged, and rightfully, that traffic managers oftentimes do not make rates at all. Their energies are bent to the analysis of those circumstances by which their rates are made for them and through which the economic demand of the world effects its own adjustments.

The production or preparation of commodities for final consumption falls naturally into two distinct parts; the creation of form value, succeeded by the conferring of place value. Transportation is concerned alone with the latter process. Of these two operations, the latter, the creation of place values, is by far the more elastic and adaptable process. The grower, the miner or the manufacturer has his first costs more or less rigidly fixed by natural or human conditions; such as the fertility of soil, the grade of ore, the prevailing scale of wages and so on. His proximity to the status of a marginal producer depends upon his relative position in these respects. With the carrier, matters are more contingent. Including within its reach, as it

does, many grades of producers and consumers, each more or less rigidly held bound by his own circumstances and conditions, as said above, the carrier is able to exercise a wide range of choice in fixing that margin of the total value which it reserves for itself. And at all times, by reason of the factors set forth elsewhere, primarily its subjection to the Law of Increasing Returns, this intermediate share of the carrier tends to adjust or accommodate itself to the end that it may discover or produce a wider margin between the values in the hands of producer and consumer, respectively. This may be best accomplished by a progressive widening of its field of activities, that is to say, by an enlargement of its physical reach and scope. It is always striving to lower the cost of production to the marginal producer. Its motto must ever be, to get more business, if not right at home, by search for it abroad—and this always with the chance that the greater the distance between the producer and the consumer, the greater the possible margin of place value remaining as its individual share. It is thus that jute from Calcutta can afford to be charged a higher rate than say linseed.

This ever-present incentive to widen the market carries with it a direct consequence. A market is a commercial area characterized by a prevalent equality of prices. Phenomenal development in this respect is characteristic of the present age. For many commodities the market is co-extensive with the world.

It is the chosen function of transportation agents, by rail and water, to ensure this result; to preserve an equality of prices despite the variety of producing and consuming conditions. The steamship and the railway are the agents by which the market is thus widened and rivalries are thus equalized. In transport parlance this is known as "keeping every one in business."

The most satisfactory way to describe commercial competition as applied to carriers is by concrete illustrations. There are two distinct varieties or degrees of it, which may be denominated primary and secondary. These might as properly, perhaps, be called simple and complex, or direct and indirect. Of these, the first concerns those cases wherein a commodity undergoes no physical transformation between producer and consumer. Shipments are usually direct. Only one rate is involved. Shall Hamburg, for example, be supplied with oilseeds from India or Argentine? This is a case of pure transportation, the creation of place value alone. Such competition, although simple and direct, recognizes no national bounds. Wheat from the Punjab or rice from Burma must be transported to London at rates that will enable them to compete in these two commodities with Australia and Siam respectively.

The cotton mills in Bombay must have their output carried to East Africa under conditions which will enable them to meet the price there demanded by the

Manchester manufacturer. This last instance, however, introduces us to the second form of competition ; in as much as a double transportation is involved first from the fields to the mill, and thereafter from the mill to the consumer.

It will also be observed that manufacture now begins to outweigh mere transportation in importance. With low grade products, like salt, the increment of value due to transportation is relatively high as compared with manufacturing costs. As the grade of product rises, however, the difference in value and in form between the raw and the finished product, render the problem of location of the manufacture more difficult as affected by the relative adjustment of rates of transportation for the two. The manufacture of timber sleepers in Burma properly results in long carriage being applied, not to the bulky lumber but to the finished product. Obviously the large proportion of waste or common lumber will not bear a high addition to its cost by carriage to another place. The main point is that the adjustment of a number of rates may determine, not only the general welfare of the industry, but even its specific geographical location with reference to the raw material on the one side and the market on the other. It may here be suggested that by a proper manipulation of rates, furniture trade could be developed in Rangoon to supply the needs of India and the neighbouring countries.

As a high American official quoted by Prof. Ripley* puts it—"It is the duty of transportation agents to so adjust their freight tariffs that, regardless of distance, producers and consumers in every part of this country shall, to the fullest extent possible, have equal access to the markets of all parts of this country and of the world, a result wholly impossible of attainment if freight rates must be constructed upon the scientific principle of tons and miles." This empirical method is not the quackery it may seem to be because it forms the basis of commodity rates under which a large part of the world's goods are transported and which are the only ones known along the Indian coast, forming a splendid illustration of the principle of what the traffic will bear.

Flat rates, such as those prevailing between the ports of India and those of the United Kingdom and the Continent, create an apparent equality for all places affected by them irrespective of distance—the transport agency playing an impartial role leaving it to the merchants to fight out their case among themselves by competition. Flat rates are further favoured by the ship-owner as they enable him to keep the rates high as what the merchants to-day resent is not so much high rates as that some rates are relatively higher than others.

It is this feeling on the part of the shippers that makes the adjustment of freight rates the complex task

* For the general theory of the subject discussed in this chapter, the author is much indebted to Prof. Ripley.

it always has been. Relativity forms the basis of shipping rates. Besides it is fairly comprehensive in scope. In addition to the relativity between directly competing commodities or places, the shipping traffic manager must regulate the rates on raw materials, the finished products and the by-products of an industry; as also the rates on goods capable of substitution one for another. A few illustrations will serve to make these details clear.

In the case of shipments of linseed from India to the United Kingdom and Continental ports, it is of great importance not merely that the rates from Calcutta and Bombay should bear a certain relation, violent fluctuations from which might injure either port, but that the rates for Hull and Hamburg should be correlated so that both ports may thrive on the trade. In the particular case the ports are placed upon an equal basis by the quotation of a flat rate to U. K. Continent.

The question of properly correlating the freight rate on raw materials and the finished products made from them, is far-reaching in its results. The location and development of manufactures depend upon it. Take, for example, the case of Europe and India. India is keen to develop its resources; not only to feed, but to clothe itself and provide for its other needs. No sooner does it seek to develop local manufactures than it finds itself exposed to competition from the older established

manufacturers at a distance. Sometimes, even, these remote manufacturers draw their supplies of raw material from its own fields and forests. These supplies are then shipped long distances as raw material; manufactured and thereafter returned to sell in competition with the local product. A glaring example of this practice is provided by the export of raw cotton to Japan which, after manufacturing cloth out of it, sells the finished product in the Indian market in competition with the Indian textile mills. However, looked at from the point of view of Japan, this case stands out as a magnificent example of the results of co-operation between the Japanese shipping and spinning companies. Favoured by long experience, by abundant supplies of capital and of skilled labour and by other advantages, the foreigner works in keen competition against the newly started Indian industry. The outcome of this competition depends in part upon the policy of the carriers. If the rate on the raw material be relatively low, the remote manufacturer is aided. If, on the other hand, the rate be fairly high on raw materials while at the same time low on outward shipments of manufactures the result would be the building up of manufactures near the sources of natural wealth, which are the potential homes of manufacturing.

Not only are rates competitive as between raw materials and the finished product made from them, but the circle of competition widens even to include all commodities capable of substitution one for another.

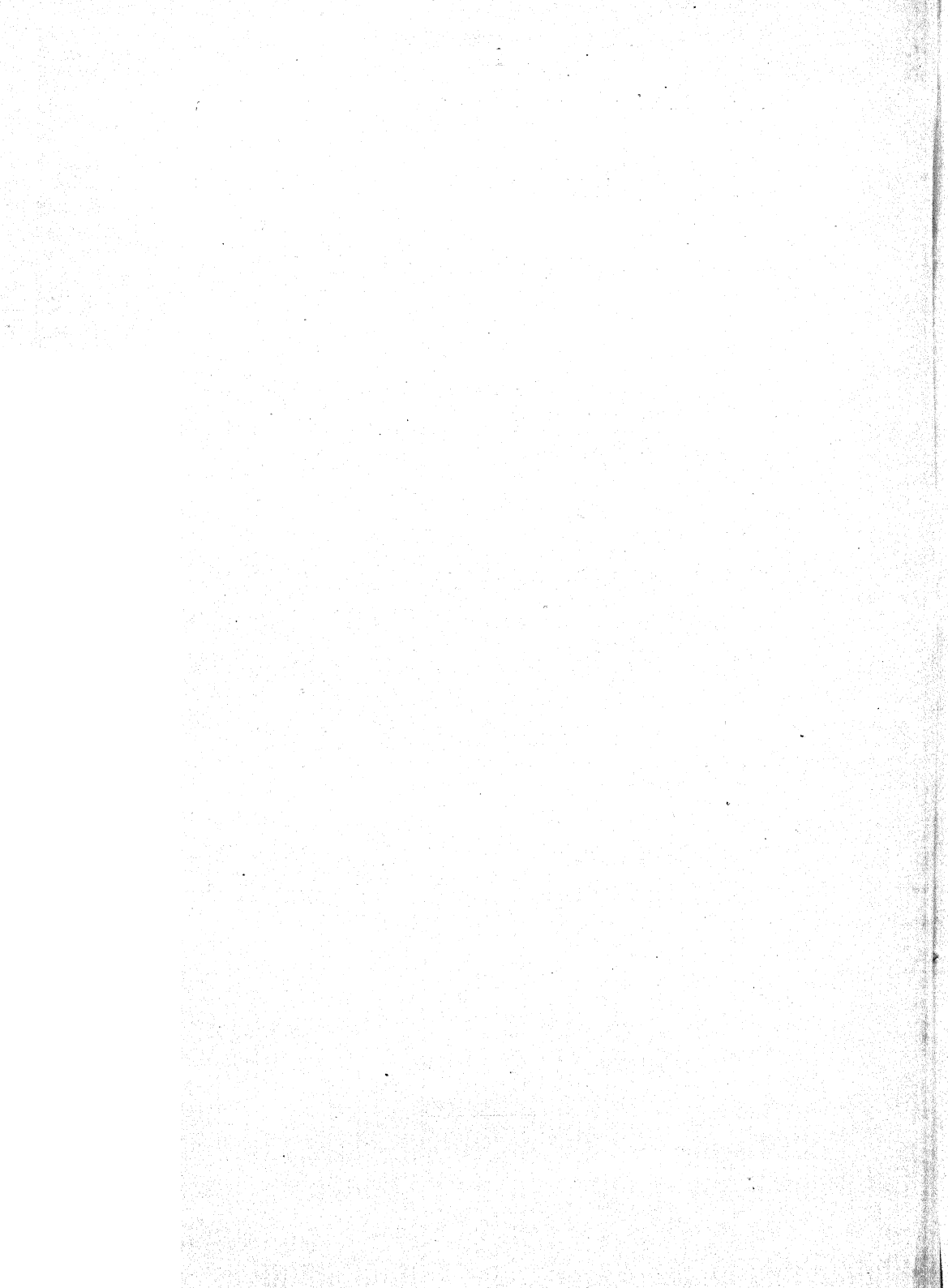
A very high freight rate upon shipments of jute from Calcutta would favour the use of substitutes.

A rise in the freight rate on Indian coal might result in the greater consumption of South African coal even in India.

As sufficient attention has never been paid in India to composing rates of freight to encourage manufacturing industries, we do not find in Indian rates those small margins that make or mar an industry as, for example, in the milling business, where the margin of profit in the manufacture of flour may be very small, an infinitesimal change in the freight rate may mean success or failure to the industry. With proper shipping facilities, India should be exporting not wheat, but its flour to foreign countries. Manipulation of shipping rates, for example, a higher rate on shipments of wheat from Karachi than on flour, would immediately set up milling factories in the Punjab.

The obligation on the part of a national merchant marine to protect its constituency not only in respect of particular rates, but in general conditions as well, introduces still further complications. The freight business of Manchester, for example, consists first, of the carriage of raw materials and supplies inwards; and, secondly, thereafter of the transportation of the finished product out to the consuming markets. Narrowly considered, it may seem expedient to crowd the rate on raw cotton as high as the value of

service probably will permit; but viewed in a large way, it may prove to be a far better business policy to maintain the rate on cotton, and other staple supplies so low, that the growth of population and production may, in the long run yield far greater returns on the high-grade manufactures of the district. Turning to India, even though the economic conditions are reversed, it may be the better policy to hold down the rate on raw cotton in order thereby to stimulate this great agricultural industry and enhance the demand for the merchandise and foodstuffs which depend upon general prosperity at least until the Indian textile industry could consume the whole of the local produce of cotton. A free hand afforded for the suitable adjustment of such apparently independent services may contribute far more to the general welfare than an insistence upon a petty and near-sighted policy of extorting from each individual service all the rate it can possibly endure. Traffic managers must take a more liberal view of these great possibilities and consider the economic development of the country as a whole.



CHAPTER VII.

SHIPPING INCOME.—(*Continued.*)

CLASSIFICATIONS

AND

RATE TARIFFS.

A classification of the articles carried is of primary importance in the making of freight rates. Besides providing facility of reference both to the shipper and to the ship-owner it enables the shipper to know beforehand the rate of freight he will have to pay for the transport of a particular commodity to a particular port. We thus see that the freight rate is made up of two equally important and distinct elements: (1) The charge according to the character of the goods; (2) the charge according to the distance to be traversed. A variation, therefore, in either of the two would mean a variation in the freight rate as finally compounded. This well illustrates the facility with which higher rates could be charged with only a small change in any one of the two factors: (1) The classes of commodities; and (2) the rates according to distance.

The freight classification is, in practice, largely empirical—the result of long experience in reacting to the needs of the business community. In the main, the cost of service, the value of the commodity and the value of the service are elements which guide the

making up of schedules; the principle of "charging what the traffic will bear," will, therefore, suffice to explain many of the details of classifications. Rates are adjusted high enough to give the maximum profit to the ship-owner, yet not so high as to keep out the shipments of the marginal shipper. In other words, as a witness before the United States Industrial Commission put it: "A freight tariff is made as it is, not because it ought to be that, but because it must be that." As Professor Ripley says, "Rule-of-thumb experience, therefore, is mainly represented in classifications of the present time; that is to say, an adjustment of freight rates upon different commodities to suit the commercial conditions which have happened to prevail at any given time. All of which emphasizes still further the need of scientific revision of these most important schedules, preferably by the carriers themselves, but by public authority if commercial inertia be too powerful to be overcome."

Though the shipping freight classifications are not so bewildering as those of the railways to justify comparison to a medley of the *Encyclopædia Britannica*, a universal stores catalogue and the customs schedule of a modern protectionist country, the shipping freight lists are comprehensive and complex enough to require thoughtful attention for complete comprehension as a study of the classification and freight rates of the Union Castle Line printed on page 213 will show. It will be noticed from the tables given that the shippe

has to consult two separate publications to get at the rate he will have to pay for carriage from the United Kingdom and Continent to any of the South African Ports. He first consults the classification table for the class allotted to his article and then the rates table or the Freight Tariff to find out what freight the article will have to pay.

Historically considered, the shipping freight tariffs may be regarded as evolved from the tariffs payable for the use of canals just as the railway rates are the successors of the earlier road tolls.

As regards the publication of the classification of articles and rate tariffs, divergent practices seem to rule in different trades and in different countries. It is understood that the German Shipping Companies published their classification and rates and made them available to the public as easily as did the Railway Companies. On the contrary, with regard to the lines controlled from the United Kingdom, with a few exceptions, the English Companies, though they publish their classification and tariffs, are not willing to let the public have an easy access to them. They are intended more or less to help the work of the various members of the Conference lines. The most important exception to this general rule of not making the classification and rate tables accessible to the public was provided by the Pacific Steam Navigation Company until their continental colleagues on the Conference prevented such publication.

The reason given was twofold. Firstly, in the tariff itself it is said that the rates are subject to alteration without notice. Consequently, if the tariff is scattered broadcast, the people will be acting on that tariff and there may be no end of trouble and complaints and mistakes. The second point is that the publication of the tariff will make it difficult to get occasionally the higher rate than the rate specified in the tariff list as was sometimes done. The English objection, however, seems to be due to the fact that the publication of the classification and freight rates would make it accessible to a possible competitor. No doubt perseverance will get for him all the rates but the shipper or the broker acting on his behalf will have to ask for the rates of all commodities—a method by no means difficult but very liable to detection which will show to the ship-owner that some competitive trouble was brewing.

As regards the merchants themselves, it is urged that they always know the rates on their commodities, being in constant touch with the ship-owners through their brokers. There does not, however, seem to be any solid ground for withholding the rates tariff from the merchants who are thus unnecessarily made to work in an atmosphere of mystery which is neither profitable nor useful to the ship-owner. The publication of the classification list will afford great convenience to them in their office and to their agents travelling abroad. The publication would also provide a guarantee to the

merchant that higher than scheduled rates will not be charged by transfer, unknown to him, of a commodity from one classification to another nor a preference given to a rival merchant by that device.

It is remarkable that in Germany where all business is organised upon a methodical basis, cargo classifications are published broadcast among the merchants while the British Companies, who have invested the shipping business with an air of mystery, do not usually publish such lists for the information of their clients, the lists being known in only two of the many trades catered for by them *viz.*, the trade to South Africa and the West Coast of South America. The former is printed below in full to provide the student with a representative classification list. The remarks at the end of the list refer to some of the scientific principles underlying the preparation of such lists.

Classification of Commodities.

(1907.)

Class I.

Arms and cartridge cases.	Carpets.
Artists' materials.	Cigarettes and cigars, manufactured tobacco.
Asbestos manufactures.	Clocks not common.
Bedsteads, brass.	Clothing.
Bicycles, motor cycles and cars.	Cutlery.
Billiard tables.	Dentists' goods and instruments.
Blankets (cases).	Drugs and Druggists' sundries.
Books, playing cards and games.	Dynamos and electric motors,
Brassware.	electric meters.
Bridgework, over 30 ft. or 40 cwt.	Essences.
Brittania metal, electro-plate and plated jewellery.	Fancy goods.
Chemical products (not dangerous).	Glassware, fine and plate glass.
China.	Hops.
	Hydraulic lifts under 40 cwt.

Classification of Commodities.—(Continued).

India rubber and manufactures.	Seeds.
Lamps, pocket and bicycle.	Show cases.
Leather and Leather manufactures. Harness and horse collars.	Soda, caustic.
Marble, polished.	Sulphate of Ammonia.
Medicines and malt extract.	Tarpaulins and waterproofs.
Metals—Copper sheets, babbit metal, zinc.	Tea.
Musical Instruments.	Telegraph and telephones sundries, unenumerated.
Notions and novelties.	Turpentine, in tins and cases.
Oil, not otherwise enumerated.	Typewriting machines.
Oilskins on deck.	Upholstery and carpets.
Packing engine.	Waterproof paper in bales.
Paints in oil, stains, and varnishes.	Wines, spirits, liqueurs and bit- ters.
Paper and stationery, in cases.	Wire, brass and copper.
Waterproof paper in cases.	Electric cables and hose.
Perfumery.	Lamp wick.
Photo sundries and materials, not dangerous.	Blotting paper.
Pictures and prints.	Boots and shoes.
Safes, Iron. under 40 cwt.	Boot polish and boot polishing outfit.
	Belting.

Class II.

Agricultural implements (N.O.E.)	Iron, packed.
Blacking.	Lead, white, red or black.
Blanket bales.	Machinery (N. O. E.)
Boiler compound.	Mouldings, finished and picture frames.
Bridgework under 30 feet or 40 cwt.	Naphthaline.
Brushes and brushware.	Oakum.
Canvas and canvas manufacture.	Oil, lubricating, and cod liver oil.
Cardboard.	Oil resin.
Crucibles, insulators, glass and china.	Oil seed cake.
Cord and rope, vegetable and wire, under 40 cwt. other than mining netting.	Oil castor.
Emery paper, stone and powder.	Oil cloth and linoleum.
Felt, tarred on deck.	Paper (printing) in cases, bales skeleton cases, rolls or reels.
Furniture other than common.	Provisions.
Glass, common glassware and syphons.	Road machines.
Glue.	Sailcloth.
Hardware.	Separators.
Hollowware and tinware.	Slate, enamelled.
Horse shoes.	Soap, fancy.
Incubators and rearers.	Sugar, refined.
Ink.	Superphosphates.
Iron gates.	Tallow.
	Tar.
	Telegraph poles, iron.
	Tents and poles.

Classification of Commodities.—(*Continued*).

Sewing machines.	Yeast.
Toys.	Zinc.
Veneer.	Earthenware (N.O.E.)
Wax.	Glass paper and sand paper.
Wheels, metal, not part of machinery.	Castor oil.
	Tinware.

Class III.

Asbestos cement.	Roofing.
Beer.	Sash weights.
Biscuits, (Ship's.)	Sheep-dip (dry).
Candles.	Slates (roofing).
Cotton waste.	Soda (common).
Clothes pins.	Sulphur.
Desks.	Threshing machines (under 2 tons weight).
Cases, sanitary (earthenware.)	Tiles (common, loose).
Mining engines.	Wire cages (not bird).
Fertilizers (common).	Wire rope (under 2 tons weight) for mining purposes.
Grease.	Peanuts.
Harvesters.	Earthenware (sanitary).
Binders.	Hay sweeps.
Malt (in cask, bags or cases).	Hardwood.
Manure (common).	Lava stone.
Mining machinery (under 2 tons weight).	Glycerine.
Nails (iron or steel).	Copperas.
Pitch.	Galvanized iron arches.
Plaster of Paris.	Wire trellis work.
Reaping machines (under 2 tons weight.)	Belting, if shipped with gold and diamond machinery.
Rosin.	

Class IV.

Basket willoware.	Iron hoops.
Bone dust.	Iron sheets.
Bottles (empty).	Iron, corrugated.
Boxes.	Lime.
Bricks (loose).	Matches (safety)
Butter dishes (wooden in crates).	Mineral water.
Chairs (cheap k.d. in cases).	Mineral wool.
Chalk.	Pickets.
China (common) in crates.	Paper bags (in bales.)
Drums (empty).	Plaster.
Fodder (bales).	Soap (common).
Girders and joists (under 30 ft. in length and 2 tons weight).	Spades.
Handles (wooden).	Shovels.
Iron angles (not parts of machinery or bridgework).	Scoops.
Iron bars,	Starch.
	Staves (if shipped on deck 5s. less per ton.)

Classification of Commodities—(Continued.)

Tiles (common unglazed, packed.)	Fruit jars.
Whiting.	Earthenware in crates, skeleton cases or baskets.
Windmills.	Nitrate of soda in 500 ton lots.
Wooden bedsteads (common).	Shoes and dies.
Wire (barbed and plain, per 2,240 lbs. in coils or bundles).	Corrugated iron.

Class V

Asphalt.	Salt, in bags, if in cases, Class II (goods not classified).
Asbestic sand.	Shingles (rough woodwork for roofing, unprotected).
Doors.	Shooks (box-boards).
Frames.	Sawdust.
Moulding (rough, unprotected).	Silex and stone blocks for lining tube mills.
Sash.	
Tanks (empty).	
Windows.	

Rates of Freight from United Kingdom and Continent.

(1907.)

Class.	Cape Town.		Algoa Bay.		East London.		Natal.		Delagoa Bay.	
	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
I	42	6	42	6	48	9	50	0	52	6
II	30	0	30	0	37	6	37	6	40	0
III	25	0	25	0	30	0	30	0	32	6
IV	22	6	22	6	27	6	27	6	30	0
V	20	0	20	0	25	0	25	0	27	6

The need for cheap transport rates upon building materials for a newly developed country requiring various materials at reasonable prices may be seen in the classification of doors, tanks, windows and shingles in class V and of tiles, girders, iron angles, bars etc., in class IV thus differing from class I by 20 shillings or more. Iron gates being ornamental are placed in class II. Safety matches, cheap chairs and chinaware as also wooden bedsteads intended for the masses are put in class IV as against brass bedsteads, carpets, fine and plate glassware included in class I and common glassware and tinware and furniture in class II. Boot polish and boot-polishing outfit are classed in No. I not being necessities of life to ordinary people in a country like South Africa.

One would have expected that agricultural machinery and seeds would be in a class lower than the one they occupy particularly in an agricultural country like South Africa.

Blankets are classed I & II according as they are packed in cases or in bales—presumably the former being of a superior kind.

Belting (ordinary) is put in class I, but if shipped with gold and diamond machinery, is charged at class III rates—a very reasonable concession in a country of gold and diamond mines. Similarly wire rope for mining purposes is in class III while brass and copper wires are in class I; plain and barbed wire being in

class IV. Reaping and threshing machines and mining machinery and engines are in class III while ordinary machinery is in class II.

Printing paper is carried cheaper than blotting paper or stationery.

It will now be easily seen that a scientific classification ought to provide a very good index to the economic condition of the country under consideration.

It might at first sight appear strange that the commodities simultaneously transported by a carrier do not all pay a standard market rate on one basis only. But the previous discussion about the peculiar nature of transport has, it is hoped, made clear that differentiation is of the essence of the work done. The economic justification for the varieties of freight rates depends upon the two main considerations of operation and traffic. Operation determines cost, traffic provides a measure of the value of the service rendered. It is absolutely essential that an article which costs more to handle than another should pay a higher rate. This provides a justification for heavy packages being charged a much higher rate than they would otherwise have paid by weight or measurement.

It explains why it is that the haul of heavy and machinery packages (such as locomotives and engines) is charged a special rate for transport between any two Indian ports. Packages weighing upto 30 cwts. pay

the ordinary schedule rates ; above that weight the following rates are charged :—

Weight of Package.			Rate of Freight.
Over	1½ tons	upto 3 tons	Rs. 30 per ton.
"	3 "	" 5 "	" 40 "
"	5 "	" 10 "	" 50 "
"	10 "	" 15 "	" 60 "
"	15 "	" 20 "	" 70 "
"	20 "		special rates to be arranged.

N. B.—When special gear has to be supplied to steamers to load or to discharge lifts of 5 tons and over, a fixed charge of Rs. 125 is made. This charge is in addition to the rate of freight for heavy lifts.

The following list of factors which vary the cost of operation as sanctioned by the Inter-state Commerce Commission of America is reproduced here to emphasize the fact that similar considerations affect the working of transport by land as well as by water :—

“ Whether commodities were crude, rough or finished ; liquid or dry ; knocked down or set up ; loose or in bulk ; nested or in boxes, or otherwise packed ; if vegetables, whether green or dry, dessicated or evaporated ; the market value and shippers representations as to their character ; the cost of service, length and direction of haul ; the season and manner of shipment ; the space occupied and weight ; whether in car load or less-than-car load lots ; the volume of

annual shipments to be calculated on ; the sort of car required whether flat, gondola, box, tank or special ; whether ice or heat must be furnished ; the risk of handling, either to the goods themselves or other property ; the weights actual and estimated ; the carrier's risk or owner's release from damage or loss."

The justification for classification from the other point of view of the value of service is less easy to understand though it is no less convincing. It does not at first sight seem reasonable that the carrier whose cost for carriage of two commodities is exactly the same, should charge a higher rate for one than for the other. For example, the round logs of timber from Rangoon have to pay twice as much as teak timber, exported from the same place ; the rate charged on assafoetida is higher than that for almonds from Bombay ; the precious metals pay more than the baser ones ; cotton piece-goods pay more than raw cotton. This apparent discrepancy may lead some people to condemn the discrimination in the freight rate based upon either the value of the commodity itself or the value of the service rendered by the carrier. An examination of the subject, however, from the point of view of the characteristic feature of shipping economics, namely the joint nature of shipping expenditure, a large proportion of which is wholly independent of the amount of cargo carried, will dissipate the doubts regarding the reasonable and just nature of the principle applied in practice. Rates of freight naturally vary with the

prices of the articles carried. Freight rates, like rent, are rather the effect of price movements than the cause of them. Freight rates are high because prices are high and the commodities can bear the rate charged. The converse of this proposition namely that prices are high because freights are high is not true of normal cases which are guided by the rules of supply and demand acting freely but may come true when the possibility of legitimate competition is rendered in-operative by the monopolistic conditions created by the shipping conferences.

Ordinarily, however, as Prof. Ripley says: "It is to the interest of the public that carriers should be satisfied with relatively smaller profits from the transportation of commodities of low price which are in general demand. Under these circumstances changes in price of such staple commodities as iron and steel or the lower priced grains, should be reflected in a corresponding modification of rates. Akin to this is recognition of a relation in general between the value of a commodity and its classification. Where, for example, articles representing different stages of manufacture have to be graded, it is but fair that the raw material, or the partly made product should be graded lower than the finished article. Similarly, articles which may fairly be substituted for one another ought to be classified with reference to their common market value."

Detailed classifications of the type mentioned above, when published, are mostly confined to oceanic carriage. As regards the *Indian Coast*, it is not usual to give the *freight* or *classification* lists, which are meant only for office use, to the shippers who are merely quoted rates for commodities in which they are interested. As a rule, classification lists are non-existent in India except in the one case of the Bombay, Karachi and Kathiawad trade; and the Indian freight lists which give against hundreds of unclassified articles the rates of carriage to particular ports are not circulated among the shippers.

An analysis of the Indian freight lists indicates the following interesting features:—

Fair weather and monsoon rates, which are higher by two Rupees per ton, are quoted for certain ports along the coast due to extra delay to the ships during the rainy season.

The freight rates are usually based upon the cargo ton by weight or equally 2,240 lbs. or by measurement of 40 cubic feet. Articles are sometimes quoted according to the packing.

Acids are charged in three different ways; if in a carboy, each carboy is charged separately; if packed in a case containing 4 jars, the freight is levied on each case and if sent in a drum of 50 gallons, the freight is quoted per drum.

Bundles of akalkara, assafoetida and aloes are charged per ton of 20 cwts., but when assafoetida is packed in cases, the charge is per ton of 40 cubic feet.

Bag cargo pays per ton of various hundred weights according to the weight of the article in comparison with its size, *i.e.*, the space it will occupy.

Thus bags of potatoes, googal, alum, almonds, coffee, ground-nuts, leaves (dry), turmeric and coke are quoted per ton of 20, 17, 16, 15, 14, 13, 12, 11 and 10 cwts.

Goods packed in cases are charged per ton of 40 cubic feet.

Products associated with one article (different products arising out of one article) or the same article in varying kinds of packing or cleanliness may have different rates quoted for transport. Rates on cotton and products connected with it well illustrate this point. Cotton; seed and its products are valued in varying terms; cotton seed is quoted at 13 cwts. per ton; cotton seed husks being lighter are assessed at 10 cwt. a ton while cotton seed flour following other types of flour pays per bag not containing more than 168 lbs. Cotton waste well illustrates the combined case of quality and packing. Cotton waste soiled and packed in bundles is quoted at 10 cwt. per ton while clean cotton waste packed in pressed bales pay at 40 cubic feet to the ton. Thus full-pressed cotton goes at 40 cubic feet to the ton while half-pressed cotton is charged per bundle not exceeding 6 cwts. in weight. Cotton docras are however charged by numbers. It may be noted that pressed bales of all articles are taken by measurement.

The following rates for various sizes of empty iron or steel barrels will show that they are fixed not upon their inherent value or carrying power but upon the ship's space they will occupy. It is thus that while a 40-gallon empty barrel sent from Bombay to Cochin is charged 10 annas, a barrel half as large again with double the circumference will pay only Rs. 1-4-0. On the other hand, an empty barrel which can contain 125 gallons has to pay a much higher proportion of freight namely Rs. 2-4-0 simply because the barrel having already reached the normal height at 100 gallon capacity has a larger circumference to hold 25 gallons more. The large amount of space thus occupied accounts for the freight charge which is as high as Rs. 2-4-0 per barrel.

The unit in the case of the bag cargo quoted per number of the pounds it contains varies according to the article carried.

The article is quoted as in bags not exceeding a stated number of pounds.

Barley in bags not exceeding 2 pharas.

Bran	„	„	„	„	140 lbs.
Flour	„	„	„	„	196 „
„	„	„	„	„	112 „
„	„	„	„	„	56 „

Thus oil seeds and cakes (poonac) in bags are not to exceed 168 lbs., bran 140 lbs. and paddy 112 lbs.

It is evident that the rate-maker has, in fixing these quantities, in view the space that would be occupied by the commodity in question.

Flour in bags which is shipped in three different sizes of 196, 112 and 56 lbs. and the freight charged upon it illustrates the principle that though shipments of larger quantities are encouraged by lower proportional rates, special sized bags or parcels have to pay more than their proportional share of the freight. Then taking the normal bag of flour to contain 112 lbs. paying annas 12 for shipment from Bombay to Cochin, we find that the bag with 196 lbs. pays only four annas more, *i.e.*, Re. 1. With the smaller size, however, the case is different. As there is in Cochin a particular demand for bags of 56 lbs. of flour, the freight charge per unit is not 6 annas, but is rated at 9 annas as it meets a particular requirement. One more illustration of what the traffic will bear!

Whole and crushed bones are quoted per quantities of 50 tons and above, each time rising by 50 tons. It is noteworthy that there is a graduated reduction of 8 annas per each progressive growth of 50 tons (18 rupees) upto 450 tons beyond which there is a uniform rate of Rs. 13-8-0 per ton.

Sometimes the nature of the cargo necessitates the introduction of special clauses in the Bill of Lading. Thus the relative bills of lading for glass, and earthenware are usually marked "ship not responsible for

breakage;" those for oil "ship not responsible for leakage." For more examples, see p. 117.

Shipments of cattle call for special terms which usually run as follows :—

- (1) Steamer not responsible for mortality or injury howsoever caused.
 - (2) Fodder and litter to be provided by the shipper and water to be supplied by the steamer.
 - (3) Any fodder carried under deck to be charged freight at the rate of Rs. 15 per 40 cubic feet. Fodder carried on deck (subject to space being available) to be carried free. Steamer not responsible for loss or damage to fodder.
 - (4) One attendant for each 10 animals to be carried on deck at Rs. 20 each, steamer supplying water only. Food if required to be supplied by steamer at Re. 1 per head per day, as supplied to lascar crew.
 - (5) Half the proportional freight per head of cattle to be charged on new ones born during voyage.
 - (6) Any mats, wooden battens or other fittings required to be supplied by shippers.
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CHAPTER VIII.

PASSENGER TRAFFIC.

As the passenger service deals with the transport of human beings, and not inanimate commodities, it is but natural that different considerations should operate in the treatment of that traffic as contrasted with the cargo trade. The great desiderata in the freight service are economy and safety; in the transportation of passengers, safety, speed and comfort—safety first and foremost, speed irrespective of economy and comfort according to payment made.

As safety is the most essential point in passenger traffic all ocean passenger vessels are to-day equipped with the latest means of securing it, namely steel hulls, transverse and longitudinal water-tight bulkheads, steel double bottoms, two to four screw propellers, life boats and life-saving appliances, fire appliances and trained men capable of using them, efficient wireless service, etc. Speed and comfort are, however, matters that provide scope for healthy rivalry which, in the Atlantic trade, has led to various phenomenal improvements. The Atlantic passenger liner thus sets the requisite standard of judgment on all matters related to passenger traffic. As regards speed, the time taken for the North Atlantic passage has been reduced by more than half since the days when, in 1856, the *Persia* crossed the distance between New York and Queenstown in 9 days 1 hour

and 45 minutes; as against which the modern record of the *Mauretania* for the same distance is 4 days, 10 hours and 41 minutes. It was in an effort to better the later record by sailing the Great Circle that the *Titanic*, according to one version, met her doom in 1913. In March 1914, however the *Lusitania* made a record day's run of 618 knots at an average speed of nearly $26\frac{3}{4}$ knots an hour, thus beating the previous record of the *Mauretania* which was 614 knots per day. As regards comforts, the luxuries provided on a modern Atlantic liner equal, if they do not even surpass, those provided by first-class hotels in the big cities of the world.

The size of the liners and the accommodation available for the passengers is also upon a proportionately large scale. Their gross tonnage varies between 20,000 and 56,000 tons and the largest steamer now afloat the *Majestic*, ex-German *Bismarek*, measuring 956 feet and 56,551 tons and now belonging to the White Star Line, carries more than 4,000 passengers.

The passenger liners on the Eastern run are, however, not so large because only steamers with a limited draft, namely 30 feet, can cross the Suez Canal. All the same, the new M. class of steamers belonging to the Peninsular and Oriental Steam Navigation Company with a gross tonnage of over 20,000 tons have beaten all earlier records regarding size and passenger carrying capacity in the Indian ocean.

The provision of the speed and the comfort, the safety and the size which distinguish the modern liners from their predecessors naturally augments the cost of their construction. Before the war, in 1913, the approximate cost of building a fast mail and passenger liner ranged, according to the estimates of the Liverpool Steamship Owners' Association, from £ 30 to £ 35 per ton gross as against the £ 12 to £ 15 for a cargo liner. Now that the cost of ship construction is reverting to the pre-war level, a modern 50,000 gross ton passenger steamer of the type running in the Atlantic, such as the *Berengaria*, the ex-German *Imperator*, taken over at the Armistice by the Cunard Company, would cost about £ 1,500,000. If she becomes a public favourite, it would not be a difficult matter for such a ship to make a gross income of about £ 70,000 per voyage as against £ 32,000, the cost of running, thus making a profit of about £ 38,000 per voyage. Of course in times of dull season the rate of profit would be reduced or even for a few weeks the steamer may run at a loss. But taking the whole year, or say rather eleven months because one month must be set apart for overhauling, such a steamer is calculated to show a profit of £ 2,50,000 per annum. With depreciation at 5 per cent., amounting to £ 75,000 and with £ 25,000 set apart for overhauling charges, the net profit of £ 1,50,000 would give a return of 10 per cent. upon the capital invested in the ship. Of course, this rate of profit cannot always be relied upon ; but it must be remembered

that these leviathan ships, the greyhounds of the Atlantic as they are called, are not built merely to make a profit but to give the company owning them the advertisement derived from the world talking about these wonder ships. It may here be mentioned that the state too encourages, in various ways, the building of these colossal ships with a view to utilising them for various naval purposes in times of war. The continuous and normal profits of the passenger business, however, go to the medium sized vessels between 15,000 and 25,000 gross tons that do their work unostentatiously.

It is a common maxim of passenger traffic, whether by rail or by water, that third class rates provide first class returns. Thus a large proportion of the earnings of passenger vessels, whether oceanic or coastal, is derived from the steerage or deck class of passengers. The preponderance of their numbers accounts for the handsome nature of the profits derived from that traffic whether in the Atlantic or the Indian waters. As regards the former, according to a competent authority, "In 1913, before the war disturbed the passenger business, 75·7 per cent. of the westbound and 65·8 per cent. of the eastbound passenger traffic and 72·9 per cent. of the total North Atlantic passenger traffic was third class or steerage. But 8·4 per cent. of the total number of passengers traveled first class and 18·7 per cent. traveled second class." *

* Prof. Huebner "Ocean Steamship Traffic Management."

The importance of the non-cabin passengers is so great that it has been thus commented upon by a committee of steamship owners before the American Congress Committee on the Merchant Marine and Fisheries: "The steadily increasing immigration, together with the patronage of those who wish to re-visit their homes abroad, furnishes a steady steerage traffic which demands and receives the most painstaking attention of the lines. It is the very life-blood of the business, so far as these superior boats are concerned, without which their existence and further operation would become impossible."

Equally strong financial support is given by the deck passengers to the ships carrying them along the coast of India. Unfortunately for them; however, the British shipping companies now engaged in the trade do not devote their "most painstaking attention" for the comforts of the deck passengers whose number reached in 1919-1920 the huge figure of 2,107,567. The only other country in the world where the deck traffic exceeds two millions of passengers is the United States of America. Yet, the Government of India would seem to be negligent of the interests of this large body of men for no steps are yet taken to carry out the recommendations of the Deck Passenger Committee which reported in the summer of 1921.

Normally, however, the interests of the deck passengers are, theoretically at least, properly guarded by

their respective Governments through legislative enactments. The American Passenger Act of 1882, as amended to date, regulates the maximum number of steerage passengers that may be carried by American vessels, and prescribes the minimum space per passenger on the various decks. It also regulates light and air provisions, medical attention and cleanliness, the privacy of passengers, etc. The observation of the various provisions is guaranteed through inspection by the Collectors of Customs.

The deck-passenger traffic along the coast of India also is worked under certain conditions as regards space, water, etc. Each passenger ship is licensed to carry a certain number of passengers indicated in a certificate called Certificate A issued by an officer specially appointed by the Government for this purpose. The duties of this officer are to inspect a passenger vessel and her fittings as also the provisions and stores carried by her. He is authorised to issue two Certificates A and B without either of which the Port Officer will not grant a port clearance to the master of a passenger ship.

Certificate A states that the ship is seaworthy and properly equipped, fitted and ventilated, and the number of passengers which she is capable of carrying in fair and foul weather in each part of the ship, including the cabins. This certificate is *issued every year*.

Certificate B states (a) the voyage which the ship is to make and the intermediate ports, if any, at

which she is to touch ; (*b*) that she has the proper complement of officers and seamen ; (*c*) that sufficient food, fuel and pure water, over and above what is necessary for the crew, have been provided on board to supply the needs of the passengers during the proposed voyage ; (*d*) that, in foul weather, the ship is furnished with substantial bulwarks and double awnings as protection against the weather. Before Certificate B is granted the officer in charge must be satisfied that the ship has not got on board any cargo likely from its quality, quantity or mode of stowage to prejudice the health or safety of the passengers. The last provision demands a particular care with regard to the cargo taken on board a passenger vessel as *Certificate B, which is issued before each voyage*, may be withheld by the officer, on the ground of harmful cargo, likely to jeopardise the health or safety of the passengers.

It may here be noted in passing that a passenger ship must have these two certificates prominently posted in a conspicuous part so that all passengers may know their contents.

In so far as the Indian passenger traffic is particularly regulated by the Government, great importance attaches to the Native Passenger Ships Act of 1887 and the rules and regulations made under it. This Act, which repeals the earlier enactments of 1876 and 1883 bearing on the subject, divides a voyage—which is defined as the whole distance between the ship's port or place of departure and her final port or

place of arrival—into two, short and long. This distinction should be carefully noted as the various rules, etc., vary according to the kind of voyage.

A Short Voyage means any voyage during which the ship performing it will not in ordinary circumstances be one hundred and twenty hours continuously out of port. Therefore for a steamer running 12 knots per hour, the longest short voyage would be from Bombay to Pondichery 1417 miles, or from Bombay to Bushire in the Persian Gulf 1406 miles, or from Rangoon to Tuticorin 1389 miles; in other words a short voyage is one which an ordinary steamer running at 12 knots may accomplish in five days. *A Long Voyage*, on the other hand, is any voyage during which the ship performing it will, in ordinary circumstances, be one hundred and twenty hours or upwards continuously out of port. It has been recommended by the Deck Passenger Committee that this period should be reduced to seventy two hours or direct steaming for three days. The same Committee have also drawn the following conclusions from a study of the available figures regarding the Indian deck passengers :—

(i) that the conditions on "Short" voyages are the ones calling for study, since the "Long" voyage is now a rarity,

(ii) that three-fourths of the "Short" voyages are from one port to another in the same province,

(iii) that more than half the passengers carried in India are carried from one port to another of the Bombay Presidency,

(iv) that the total volume of the trade has doubled within the past 30 years, in spite of the extension of railway facilities.

As most of the voyages along the coast of India are short voyages, the rules governing them are fully analysed below.

(1) For seasons of *fair weather*, a ship performing a short voyage shall contain in the between-decks at least six superficial feet * and thirty-six cubic feet of space available for every between-decks passenger and on the upper deck at least four superficial feet available for each such passenger and six superficial feet available for each upper-deck passenger.

(2) For seasons of *foul weather*, a ship performing a short voyage shall contain in the between-decks at least nine superficial feet and fifty four cubic feet of space available for every between-decks passenger and on the upper deck at least four superficial feet available for each such passenger and nine superficial feet available for each upper-deck passenger.

(3) But in seasons of foul weather a ship shall not carry upper-deck passengers unless she is furnished

* It should be observed, however, that the Native Passenger Ships Commission of 1890, after practical experiments, came to the conclusion that at least nine superficial feet were required for a passenger to lie down comfortably.

with substantial bulwarks and a double awning or with other sufficient protection against the weather.

The classification of short voyages made by and the space allowances provided for passengers under the Act of 1887 may be illustrated as follows :—

(a) SHORT VOYAGE—FAIR SEASON.

Each upper-deck passenger is allowed 6 sq. feet.

Each between-deck* passenger is allowed 6 sq. feet in addition to 4 sq. feet of airing space totalling 10 sq. feet.

Now if the between-deck space is 1000 sq. feet and the upper deck space 700 sq. feet, the number of passengers allowed in the 'tween-deck would be $1000 \div 6 = 166$. Each such 'tween-deck passenger will also have 4 sq. feet airing space reserved for him on the upper deck thus $4 \times 166 = 664$ sq. feet.

The balance space then available on the upper deck will be $700 - 664 = 36$ sq. feet.

The number of additional passengers on the upper deck would then be $36 \div 6 = 6$.

Therefore the total number of passengers allowed will be $166 + 6 = 172$.

* A 'tween-deck may be described as any lower deck with only artificial lighting and ventilated by means of ventilators from above.

(b) SHORT VOYAGE—FOUL SEASON.

Each upper-deck passenger is entitled to 9 sq. feet.

Each 'tween-deck passenger is entitled to 9 sq. feet in 'tween-deck and 4 sq. feet airing space on the upper deck.

As the space in the 'tween-deck is 1000 sq. feet and in the upper-deck 700 sq. feet the number of passengers on the 'tween-deck will be $1000 \div 9 = 111$.

Each one of these will also claim 4 sq. feet from upper deck space, thus taking up, $111 \times 4 = 444$ sq. feet. The balance space then available on upper deck will be $700 - 444 = 256$ sq. feet, in which the number of passengers accommodated will be $256 \div 9 = 28$.

The total number of passengers for the whole of the available space will thus be $111 + 28 = 139$.

At a glance, then, a steamer can carry in fair weather 172 passengers and in foul weather 139 passengers.

Further to illustrate this rather intricate calculation, another example may be added.

A ship with 100 superficial feet available between decks and 70 superficial feet on the upper deck would carry in fair weather a maximum of 17 deck passengers.

Between-deck space, 100 sq. feet, will take $100 \div 6 = 16$ passengers.

These passengers will claim for airing 4 sq. feet per head from the upper-deck space of 70 sq. feet leaving the balance of $70 - 64 = 6$ sq. feet which will take $6 \div 4 = 1\frac{1}{2}$ *passenger*, totalling 17 passengers.

The same ship in foul weather will carry 13 passengers thus :

Between-deck space $100 \div 9 = 11$ upper deck balance space $70 - (11 \times 4) = 26 \div 9 = 2$, totalling 13 passengers.

This meagre space allowance, to each deck-passenger of six feet in fair and nine feet in foul season leads to the overcrowding of the passenger boats which has a very injurious effect upon the health of the travelling public, to say nothing of the serious risk to life in case of an accident. The passengers are cramped for space and the air they breathe is foul. Proper ventilation is conspicuous by its absence and the extent of the harm thus done to the passengers will be evident from the following extract giving the minimum amount of ventilation required for pure air.

“A certain amount of fresh air has to pass through a given air space in a fixed time in order to maintain a certain degree of purity. The amount has been fixed at 3000 cubic feet for each healthy person in an hour. Before considering the appliances of moving this air, we must consider

what should be the minimum size of the air space through which the fresh air has to pass.

“ This will entirely depend upon the rate at which air can be taken through the space without the movement being perceptible or injurious.

“ Thus a space of 100 cubic feet must have its air changed thirty times in an hour if 3000 cubic feet of air are to be given while a space of 1000 cubic feet need only have it changed three times in an hour for an equal ventilation”.*

It follows from the above that when the area allowed is 36 cubic feet as is the case under the Native Passenger Ships Act of 1887, the air would have to be changed about 84 times in an hour without the movement being perceptible or injurious. The air in the ship cannot change 84 times in an hour, but if it did, it would be very injurious to health.

The unsatisfactory nature of the ventilation, particularly in the 'tween-decks, is also commented upon by the Deck Passenger Committee who have recommended that the Bengal Rule—“Exclusive of hatchways, natural ventilation in the ratio of 5 sq. inches to every statute adult should be fitted to each between-deck compartment in which passengers are carried.”—should be applied in all cases. The Committee have, moreover, recommended a higher space allowance per passenger, varying from 9 feet to 15 feet,

* Dr. Parkes' "Manual of Hygiene".

according to the nature of the voyage. * For purposes of comparison, it may be stated that the space allowed to the lascars under the Indian Merchant Shipping Act is 12 superficial and 72 cubic feet (the 72 cubic feet being made up of 12 superficial feet multiplied by the height of the 'tween deck's, 6 feet); and that the English Merchant Shipping Act allows a European crew 15 superficial feet and 120 cubic feet of space.

Next in importance is the question of the fresh water supplied to the passengers. The Government rules allow one Imperial gallon of water per day for each deck passenger. But it is desirable that each ship should carry about 10 to 12 gallons per day per head. It is usual, therefore, for a steamer accommodating 2000 deck passengers in addition to the saloon passengers, to carry about 190 tons of water. Besides it would have about 140 tons of fresh water for the use of engines and part of this may be drawn upon for passengers' use, if necessary. All the same it would be advisable to carry a condenser for emergency purposes.

In order to provide the maximum of facilities to the passengers in this respect, it is necessary to provide a continued supply of water day and night which may

* The Committee have divided voyages into the following six classes with respective space allowances per deck passenger: (1) Short voyage, festival seasons, 9 feet; (2) short voyage, non-festival season, 9-5 feet, Indian members recommending 10 feet, (3) short voyage, Bombay coast, fair season, 11 feet; (4) short voyage, fair season, 12 feet; (5) short voyage, foul season, 14 feet; (6) long voyage of 72 hours, fare and foul seasons, 15 feet

It may be noted that these space allowances are recommended on a flat basis without airing space, which is to be abolished.

be done by installing at proper places say six water taps worked by a lever arrangement so that when not pressed by hand, the supply would automatically cease and thus prevent the needless waste sometimes caused by careless passengers.

The number of the water taps required may be fixed at one per every 300 or 350 passengers. Where owing to the length of the voyage, the taps cannot be kept running throughout the day, they should be kept open at least three times a day for two or three hours at a time.

In the mornings there is a very much larger rush for water and therefore the taps and pumps must remain open for at least three hours and at noon and in the evening for about two hours at stated times.

The fresh water supply should be kept in charge, say, of the carpenter assisted by one or two gunners, if necessary. But these men must be carefully watched by the Chief Officer to prevent their stopping the supply of water to earn small gratuities from needy passengers when the taps are reopened for their use.

Passengers should also be allowed an unrestricted supply of sea water for bathing.

Sanitary arrangements are provided for under the Native Passenger Ships Act as follows:—Two latrines for the first hundred passengers and one for each succeeding hundred or part of hundred, thus giving 11 latrines for 1000 passengers and 21 for two thousand and so on. The figures sanctioned by law have been found

inadequate and the steamers of to-day usually have a larger number of latrines than that strictly required by law.

The Deck Passenger Committee have proposed a scale of two latrines per 100 passengers, thus providing 20 places for a ship carrying 1000 passengers. On any ship the maximum need not exceed 60.

To secure complete cleanliness in this part of the ship, it would be necessary to have a continuous flow of water secured by some sort of automatic flushing arrangements. It should be attended to by the Topas, under a serang carrying out instructions from the Doctor and the Chief Officer who should be particularly asked to supervise the men with a view to prevent any latrines being closed to be reopened on payment of a small buksheesh by a passenger in need.

Let us now turn from the facilities provided on passenger steamers to the passengers* themselves. Much need not be said here about the cabin passengers who, whether tourists bent on pleasure and sight-seeing or travellers dominated by the idea of making money, are in a position to meet all their requirements by paying the usual charges and are not likely to be exploited without their knowledge. The deck passengers, however, are generally not rich enough or bold enough to insist upon their rights to bare necessities even though they may have paid for them. As we have already seen the Atlantic services are, to a large extent,

*Passengers by pilgrim ships, forming a separate class by themselves, are not treated here separately. The Haj pilgrims from Bombay, for example, are carried under special conditions imposed by the Government.

maintained by the emigration traffic *i. e.*, the poorer class of Europeans who go out to America to carve out for themselves careers denied to them in the old world. As the stream of emigrants has been going on for many decades, the counter stream of the descendants of the pioneers has also begun and provides stability to the passenger traffic both ways, though naturally the westbound traffic is much larger and more important than that bound eastwards. The nature of the former will be easily realized by a glance at the following table compiled by the Departmental Committee of the British Board of Trade.

Emigration and Emigration 1912-1913.

INTO.	COUNTRY WHENCE ARRIVED.						
	United Kingdom	Russia.	Austria Hungary.	Italy.	Spain.	Other countries.	Total.
U.S. A (Year ended 30th June 1913)...	88,000	291,000	255,000	266,000	N. S. D.	298,000	1,198,000
Canada (Year ended 31st March 1913)...	151,000	21,000	22,000	17,000	N.S. D.	52,000	* 263,000
Argentina (Year ended 31st December 1912 ...)	3,000	N. S. D.	7,000	81,000	166,000	66,000	323,000
Brazil (Year ended 21st Dec. 1912 ...)	1,000	N. S. D.	N. S. D.	32,000	† 112,000	35,000	180,000
Total ...	243,000 12%	312,000 16%	284,000 15%	396,000 20%	† 278,000 14%	452,000 23%	19,64,000 * 100

N. S. D. Not separately distinguished and included under the head of other countries.

* This figure includes 77,000 Portuguese.

† This figure does not include 139,000 immigrants of U. S. nationality.

Russia, it will be seen, provided the largest number of emigrants across the Atlantic of whom about 93% migrated, before the war, to the United States of America.

Another interesting feature of this passenger traffic is the great part it has played in the development of the German mercantile marine. The emergence of a new power or patent, the establishment of a new trade or industry has often helped to create and develop the merchant fleets of various maritime countries. Just as the introduction of steamships of iron and steel caused the development of the British mercantile marine and the gradual decline of the American ocean fleet which relied a bit too long on the clipper ship built of wood, similarly the swing of the pendulum, indicated by the increase in the number of emigrants to America from the continent of Europe as against those from the United Kingdom, helped to create a new rival in the German mercantile marine.

The following statement based on figures published by the Immigration Bureau of the United States of America clearly brings out the gradual transfer of steerage traffic from British to Continental ports :—

Average annual immigration into the U. S. A. from various countries during the years 1825-1914.

(Decennial Periods)	Average Annual Immigration from							
	All Countries.	United Kingdom.	Germany.	Scandinavia.	Italy.	Austria-Hungary	Russia.	Balkan
1825-34	32,000	14,000	4,000	...	...	...	...
1835-44	71,000	41,000	19,000	...	...	...	...
1845-54	294,000	168,000	95,000	2,000	...	...	...
1855-64	150,000	79,000	49,000	2,000	1,000	...	...
1865-74	334,000	134,000	113,000	22,000	3,000	3,000	2,000	
1875-84	389,000	163,000	109,000	45,000	12,000	17,000	10,000	
1885-94	453,000	119,000	98,000	50,000	47,000	48,000	38,000	
1895-04	463,000	56,000	28,000	38,000	114,000	102,000	77,000	18,000
1905-14	1,012,000	96,000	34,000	41,000	220,000	235,000	199,000	57,000

The table indicates how, during the ninety years under examination, the United Kingdom and Germany were, for the first twenty-years, the only countries that provided the bulk of the emigrants ; while during the last twenty years their place was taken by Italy, Austria-Hungary and Russia. The continuous growth in the figures for the later countries is a marked feature of the statement. During the early years of this traffic, it was but natural that Great Britain, with her preponderance of emigrants, mostly Irish, and the geographical advantages of a central position dominated the passenger traffic. In 1845, however, Germany's annual average for the decade jumped up to 95,000

as against 19,000 of 1844. Moreover, this period coincides with the establishment of the Hamburg America and the North German Lloyd lines which naturally flourished with the growth of the German emigration traffic. When, however, in the nineties the number of German emigrants began to fall and it was found that the number of emigrants, from Russia, Austria and Italy was growing by leaps and bounds, the German Government seems to have decided to secure to the German shipping companies this new traffic which the North German ports, owing to their geographically favourable position, could handle very satisfactorily. In 1894, therefore, control stations were established along the Russian frontier ostensibly to prevent the spread, by the Russian emigrants passing through Germany, of the epidemic of cholera which had then broken out in their country, but really to draw to the German ships the huge passenger traffic not merely of Russia, but with the development of the control system, of Austria, Italy and the Balkans. That this was the real aim of the control stations became evident when the management of these stations was vested in the Hamburg America and the North German Lloyd lines which were directly interested in the emigration traffic. Moreover, new control stations, irrespective of any epidemic, were being erected from time to time, the last one being established at St. Ludwig in 1910. The system of control stations may, therefore, be regarded as an indirect but very effective state aid to national shipping.

The success of the German effort to develop a mercantile marine by means, among others, of the passenger traffic found willing followers in Austria and Hungary whose ports Trieste and Fiume were, before the great war, busy centres of traffic provided by the large number of their nationals emigrating to America. Now that these ports have been handed over to Italy, the Italian shipping lines are leaving no stone unturned to capture the passenger traffic emerging from their own and neighbouring countries. In fact to-day, the passenger business, particularly when concerned with the carriage of nationals, is regarded as a main factor in the development of a national merchant marine. The moral of this principle when it comes to be applied to India is obvious—namely that the carriage of Indian passengers along the coast of India should be gradually reserved exclusively for Indian vessels.

The passenger traffic in India is, in point of numbers, second only to that of the United States of America.

The total number of persons who left Indian ports in native passenger ships under the Act of 1887 was :—

In the five years ending	1895-96	6,411,126
„ „	1900-01	6,713,039
„ „	1905-06	8,621,688
„ „	1910-11	11,818,413
„ „	1915-16	12,196,764

The number in each of the following years was :—

1914-15	2,112,813
1915-16	2,203,681
1916-17	2,089,562
1917-18	1,856,627
1918-19	1,998,851
1919-20	2,107,567

This vast traffic is composed of two main geographical branches (1) the Western and (2) the Eastern, or, the Bombay and the Bay of Bengal lines. It is remarkable that these two divisions also correspond with another classification based upon voyages namely (a) from and to the ports *within* a province and (b) from and to the ports *without* a province.

As regards (a) Bombay, whose contrast to Madras in this respect is remarkable, holds a predominant position in the whole of India as the following figures will show at a glance.

Statement of the number of passengers from and to the ports within an Indian province.

	Bombay & Sind.	Burma.	Bengal.	Madras.
1909-10	1,322,720	43,115	28,047	2,282
1910-11	1,600,247	49,166	29,807	2,057
1911-12	1,524,026	51,959	28,069	1,562
1912-13	1,561,090	49,697	33,359	1,465
1913-14	1,601,302	56,997	31,370	1,653
1914-15	1,239,176	42,240	28,081	1,051
1915-16	1,304,352	34,532	23,218	794
1916-17	1,281,847	28,180	18,663	363
1917-18	1,200,004	37,252	16,532	184
1918-19	1,298,452	31,227	26,058	204
	13,933,21	429,365	263,204	11,615

As regards (b) the provinces bordering along the Bay of Bengal may be said to claim almost the whole of such traffic while Bombay has hardly any traffic deserving to be called inter-provincial, though it far exceeds the other provinces in the total number of passengers carried. This will be clear from a comparison of the following statement with the one given above.

**Statement of the number of passengers from the ports
of one Indian province to those without
the province.**

	Burma.	Bengal.	Madras.	Bihar & Orissa.	Bom- bay & Sind.
1909-10	337,324	189,352	150,856	43,296	5,526
1910-11	220,017	171,155	145,900	40,169	4,681
1911-12	221,218	164,968	149,863	31,641	4,618
1912-13	215,083	175,861	125,756	26,076	4,338
1913-14	267,130	204,208	150,779	33,159	4,472
1914-15	208,231	188,257	97,269	31,281	3,862
1915-16	190,993	180,955	124,637	26,607	3,598
1916-17	189,728	134,226	80,968	15,779	4,022
1917-18	172,427	125,393	65,373	13,716	3,988
1918-19	125,241	150,239	96,788	22,978	5,230
	2,147,392	1,684,614	1,188,189	284,702	44,335

The composition of inter-provincial traffic will be evident from the following actual illustration which is typical of how various numbers of passengers from the eastern coast ports might embark on a steamer bound for Rangoon :—

The steamer leaves Madras for Rangoon via Coconada and other Coromandal ports with 786 adults and 86 children (43 Adults on the basis of two children to one adult). At Coconada, she takes 680 adults and 12 minors (6 adults). The next port is Vizagapatam where she takes 411 adults and 34 children (17 adults); next at Bimlipatam 97 adults and 6 minors (3 adults) embarked. Calingapatam was the next port where 502 adults and 56 minors (26 adults) came in; then Varvar 333 adults and 21 minors (11 adults); Gopalpur 379 adults and 15 minors (8 adults), thence straight on to Rangoon with a complement of 3303 passengers.

The deck passengers along the Indian coast though usually manual labourers are not necessarily confined to that class. Well-to-do artisans and substantial traders are known to travel on deck in the absence of intermediate accommodation which, though not beyond their means, would just cater for their comforts. This is particularly the case in the Bay of Bengal where there is no provision for the better class of deck passengers. Where, however, a reserved deck has been specially allotted to them, as in the Bombay to Karachi and intermediate services, full advantage is taken of the facilities provided. The rest

of the Bombay deck traffic consists of the labourers from the south who come up to Bombay to seek employment in the mills, the docks, the railways, and the engineering works of the city.

The great bulk of the deck passengers along the western coast is carried by the steamers of the Bombay Steam Navigation Company which has a fleet of 24 small steamships, half of which are mixed cargo and passenger vessels while the rest are for passengers only. This fleet is supplemented by the two steamers belonging to the Indian Co-operative Navigation and Trading Co., Ltd., whose shares, as its name implies, are mostly distributed among the class of men who travel as deck passengers. The steamers in this traffic have been specially designed for the purpose. They are of light draft, short length and a low free board. There are two upper decks and a small 'tween deck—an arrangement which under the existing rules admits of a large number of passengers being carried.

The direct service from Bombay to Karachi, however, is maintained by the large steamers belonging to the British India Steam Navigation Co. which has, moreover, a monopoly of passenger traffic in the Bay of Bengal. Rangoon is the chief centre of this traffic which radiates to and from the east and the west of the Bay. Owing to its geographical position, Rangoon has become one of the largest and the most important immigrant ports in the world as is seen from the

following statement of its passenger statistics for 15 years ending with 1919.

Rangoon Passengers.

	Arrivals.	Departures.	Total.
1905	326,832	274,643	601,475
1906	291,751	260,280	552,031
1907	239,701	226,966	466,667
1908	252,075	227,568	479,643
1909	256,482	192,801	449,283
1910	268,107	217,111	485,218
1911	289,445	221,981	511,426
1912	256,985	240,917	497,902
1913	313,039	271,687	584,726
1914	216,841	73,242	290,083
1915	291,968	198,715	490,683
1916	229,865	200,898	430,763
1917	206,789	216,910	423,699
1918	238,138	206,280	444,418
1919	271,453	200,646	472,099

Of these a very vast majority are Indian deck passengers. They play a large part in the economic life of Burma and their importance may be gauged

from the following recorded opinion of the Rangoon Chamber of Commerce :—

“Burma has to very largely depend upon India for the all important labour supply with which to move her harvests, to man her industries, to deal with her shipping, to provide railway servants and domestic servants and to supply coolies for general purposes. As matters stand, the supply does not equal the demand, with the result that wages in Burma are far above the Indian level.”

The following classes supply the main portion of the deck passengers (in order of their importance to Burma):—(1) *agricultural labour*; a great deal of agricultural labour connected with rice, the most important export crop of Burma, is provided by Indian deck passengers, whilst the further stages in the preparation and export of this commodity depend directly, and so far as the white rice, the foreign export, crop is concerned almost solely, upon them first in the mills, secondly on the Rangoon wharves, and in the stream; (2) *skilled industrial workers*; the non-European element in the chief organised industrial concerns of Burma, such as the Burma Railways Coy. the Burma Oil Company, the Irrawaddy Flotilla Company, etc. is mostly Indian; (3) *unskilled industrial workers*; here, too, the percentage of Indians is large; (4) the lower grades of *merchants* in the rice and the piece-goods market as also of medical and legal

practitioners; and (5) *clerks* in Government offices and business houses.

The busy seasons for deck passengers are, for the outgoing steamers, from the middle of March to the middle of May, and for the incoming steamers, from the month of September to the month of October. But since the war a change has come about and the busy season now overlaps the monsoon season; there is thus a more or less continuous flow of deck passengers to and from Rangoon throughout the year.

Turning now from the nature of passenger traffic to the fares for passages, we find that they are generally divided into three well-defined classes:—first-class, second-class and deck or steerage. Owing to the short passage between most of the Indian ports, the tickets are further sub-divided into those without food and with food which may be Indian or European, the latter being provided principally for indigent Europeans travelling between India and Burma. There is, however, a great demand on the part of middle-class Indians for an intermediate class or reserved deck without food which will enable them to travel in greater comfort than the labourers who form a very large proportion of the Indian deck passengers. If instituted, the two classes of deck passages would be analogous to the two sections into which the steerage passage from Europe to America is classified, one for the immigrants and the other called the third class, meant for steerage passengers who are not immigrants.

The European steerage business is, as stated before, a very profitable one. The rate of passage-money including food is about one-third the average fare charged the first and second-class but the steerage passenger does not occupy as much room in proportion and costs relatively less to feed. Similarly the deck passenger traffic along the Indian coast is, if anything, more profitable because with practically no exceptions all Indian deck passengers take tickets without food and pay at a rate which works out at one-sixth the average of the second and first class fares.* So the Indian deck passenger pays, for a coastal voyage by an overcrowded steamer, relatively as high a rate as the European steerage passenger when he crosses the Atlantic in some of the most magnificent ships of the world. Yet when concessions on his behalf are asked for from the shipping companies serving the Indian waters, the reforms are postponed under the plea that they would enhance the amount of the deck-fare!

This fact of the high rate of the deck fare particularly in India in view of the poor accommodation provided, is easily accounted for by the traffic being controlled by monopolistic concerns. The more

* The deck passage from Rangoon to Calcutta is Rs. 13 without food while the second and first class fares are Rs. 58-8-0 and Rs. 99 respectively also without food. On other runs, however, the ratio slightly varies.

evolved organisation of the Shipping Conference dictates the fares in the Atlantic passenger business. The American Atlantic Conference is the most important conference in the North Atlantic passenger trade. It decides on matters of general interest, holds joint meetings and takes joint action in matters concerning its components the Continental Conference and the North Atlantic Conference. The former consists of 10 lines mostly continental while the latter has an equal membership mainly representing British, American and Scandinavian interests. Besides these, there are the Mediterranean Conference with eleven members and a strong German group, called N.D.L.V. for short, its full name being Nord-Atlantischer Dampfer Linien Verband. In addition to these four main conferences however, there are agreements for various types of passenger traffic, such as first-class and steerage business, between members belonging to different conferences; the whole system representing a weird mosaic to the uninitiated. In India, the real aim of the conference system, namely elimination of all competition, is attained by the British Company, with a monopolistic control of the Bay of Bengal traffic, starting rate-wars against an opposition line even when started by the Indians themselves. Such strifes are known to have gone to ridiculous lengths such as not merely carrying the passenger free of any charge but also presenting him with a handkerchief at the port of destination. Such anti-national antics should be made definitely illegal.

With a view to stop the ruinous rate-war in the passenger carrying trade, which would then benefit by the flow of new capital now held back through fear of a total loss, the writer, in 1921, advocated before the Indian Deck Passenger Committee the fixing of a minimum rate of fare by law so that fresh Indian enterprise may be forthcoming in the world of shipping. The following is the official summary of the oral evidence.

"Rate-War.—What kills new enterprise in the shipping field is the necessity of standing a fierce rate-war at the outset. Witness considers that Government would be justified in intervening in order to prevent a rate-war, one reason being that the passenger carrying trade deals with human beings and is, therefore, in principle different from the selling of material commodities. Government assistance should, however, be strictly limited. In witness' opinion, the less the Government interferes with trade the better. For the reason given he considers that Government ought to intervene in the passenger carrying trade by sea, and the form the assistance should take is the fixation of a minimum fare. Fixation of the minimum would prevent a rate-war, and would have the immediate effect of bringing new companies into the field and competition between them would at once result in more amenities being provided for the deck passengers. Witness considers a rate-war usually unfair. As regards the method of fixing the minimum deck passenger fare witness considers

that the Department of Commerce, has, or will soon have, sufficient expert assistance to collect the essential financial data and arrive at what a fair minimum deck passenger fare ought to be. He would, however, allow the minimum to be revised from time to time. Believes that some precedent exists but cannot at the moment refer to one.* Believes that the rate-war has been the cause of the most of the failures of concerns that have attempted to enter the shipping trade in recent years.

"*Fares.*—Witness submits a specimen balance sheet of a voyage estimate from which he infers that shipping profits are at present quite high enough to allow of more amenities being provided for deck passengers without the fares being raised."

The following is a voyage estimate for a passenger steamer (1000 deck and 50 cabin passengers) with a cargo capacity for 3000 tons running between Rangoon and Calcutta with rice and jute respectively :—

* The alternative method of restricting an increase of rates once reduced to drive out competitors is adopted in the United States of America ; Sec. 19 of the Shipping Act of 1916 lays down

"That whenever a common carrier by water in interstate commerce reduces its rates on the carriage of any species of freight to or from competitive points below a fair and remunerative basis with the intent of driving out or otherwise injuring a competitive carrier by water, it shall not increase such rates unless after hearing the board finds that such proposed increase rests upon changed conditions other than the elimination of said competition."

Expenses for a Round Voyage of 20 days. Rs.

Upkeep (including repairs) and Insurance.	23,500
Bunkers 460 tons @ Rs. 17 per ton	7,820
Port Charges	3,200
Stevedoring	3,850
Dunnage	500
Claims	1,000
Sundries	1,500
Management Expenses	2,000
Total Rupees...	<u>43,370</u>

Earnings.

Freight Money	42,000
Passage Money	31,000
Total Rupees...	<u>73,000</u>
Profit (approximate) ... per trip.	Rs. 30,000
per year for 16 trips	„ 480,000

If the value of the steamer be taken at Rs. 15,00,000† allowing Rs. 75,000 for depreciation a 5%, the rate of profit is 27 per cent.

The above estimate put before the Indian Deck Passenger Committee by the author and not contradicted by the two members on the Committee connected with the British shipping interests is reproduced here to show that, if they were willing or if forced by legislation, the shipping companies could ameliorate, to a very large extent, the conditions of deck travel in India without demanding a higher rate of fare.

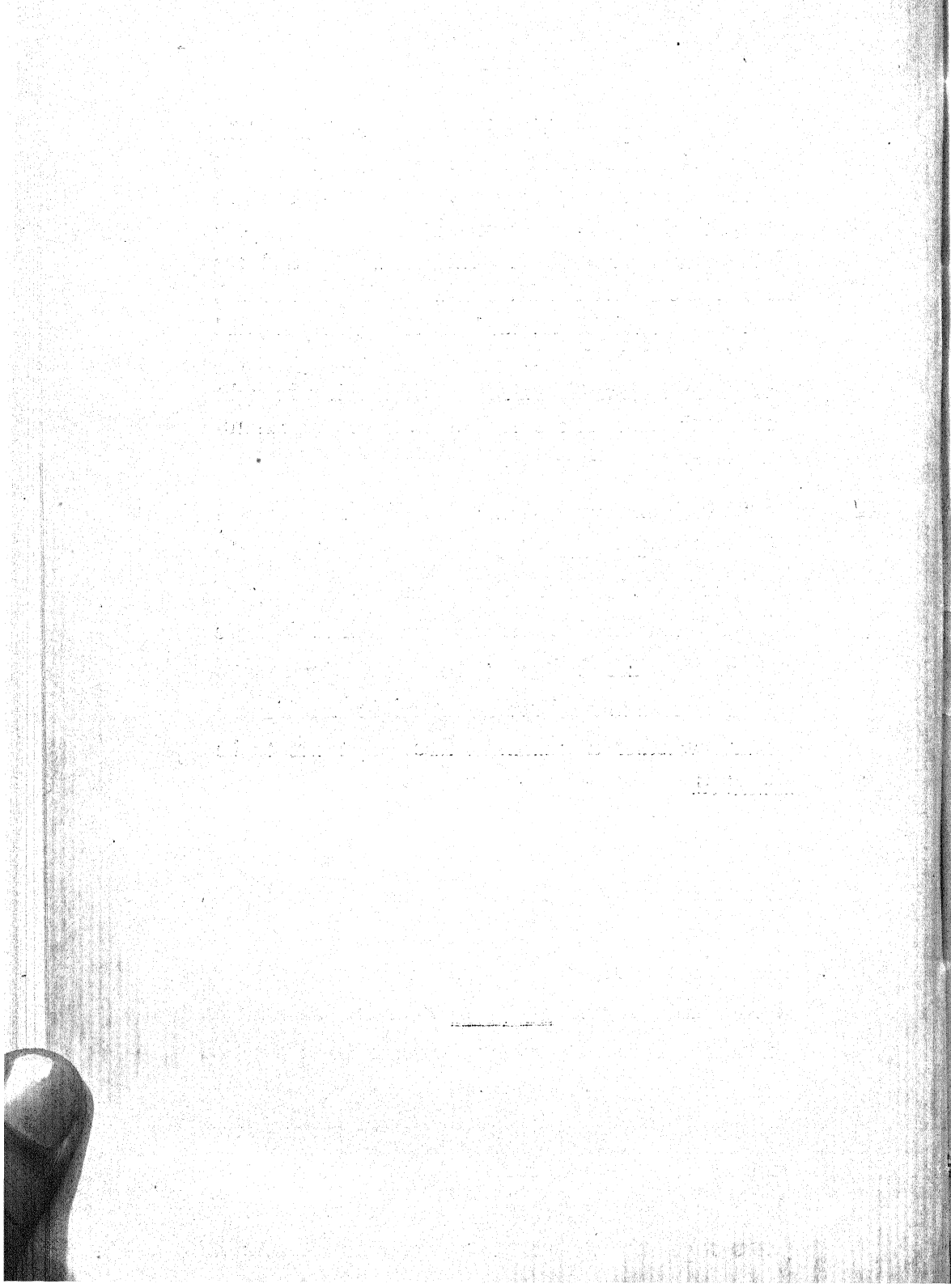
† As the passenger steamer in the Bay of Bengal has a gross tonnage of about 4,000 tons, £ 25 per ton gives us £ 1,00,000 or Rs. 15,00,000 as the price of such a vessel.

This view of the subject is also shared by the majority of the members of the Committee whose recommendation under the heading "Rate War" is, being important, printed below in full :—

"It was urged by some witnesses that Government ought to intervene by fixing a minimum deck-passenger fare. Some unofficial and some official witnesses stated that new capital is debarred from entering the shipping trade through fear of a rate-war, and it is common knowledge that in the past attempts have been made to enter the trade and have failed, generally partly owing to a rate-war. These witnesses expressed the opinion that, if the certainty of a rate-war could be removed by means of the prescription of a minimum fare, plenty of new capital would be forthcoming for new shipping ventures, and the ensuing competition would of itself lead, without an increase in the fare, to improvement in the amenities provided for deck passengers. The Committee are averse from recommending more than the minimum intervention by Government in the shipping trade, but realise that Government is closely concerned to see that fares remain low in areas that depend on deck passengers for their developments, for instance, Karachi, Bombay City and the Province of Burma, and further that the sale of facilities for carrying human beings stands on a different footing from the sale of commodities for consumption. The carriage of passengers by sea is, indeed, essentially a service in which the public control may justifiably

exceed that imposed on an ordinary business. The principle of such control has been accepted in the case of the carriage of passengers by rail. It is a fact that one or two shipping concerns at present hold the monopoly of the passenger trade in Indian waters, and the Committee consider that if a rate-war could be avoided, a stimulus would be afforded to fresh enterprise, and that this would lead to amelioration of passage conditions generally, a result which competition has brought about in the case of the emigration trade from European countries.

“The issues involved are of a difficult nature and the complete data needed for an examination of the question are not before the Committee. A majority of the members think, however, that if a moderate increase in space allowances is found to be followed by a material increase in fares, Government might consider the question whether a minimum fare ought not to be prescribed.”



CHAPTER IX.

PORTS.

Ports provide resting places for the ships and half-way houses for their cargo. Where Nature is favourable, a fiord or a crater, a longitudinal valley or a double bay might provide a safe harbour ; in other places, such as Dover and Madras, the harbour is "a challenge flaunted in the face of Nature, which in revenge gets in a home thrust at intervals." But wherever there is sea-borne trade, there is a port ; moreover, every port has its own hinterland which may extend beyond the town and even the geographical province to which the port belongs ; for example, the port and town of London are synonymous. But this is not so in the case of Hull and Liverpool which cater for their respective counties. To go a step further, Karachi provides an outlet for the wheat of the Punjab and the sphere of influence of Calcutta extends beyond the province of Bengal. It is thus seen that it is not advisable to regard the administration of a port as a municipal matter of local importance only, though it is true that some ports, such as Antwerp and Hamburg are successfully administered by their municipalities. For this, there are historic reasons which need not be discussed here. Normally, however, the best interests of the country require that the control over ports should be invested in a central authority

which can co-ordinate the various interests concerned. But there the functions of the central authority ought to cease. Too much interference in the execution of the port schemes is not to be encouraged because that would lead to red tape and inefficiency. Therefore, with a view to reconcile the various interests, the administration of the major ports of India is vested in the respective port trusts—semi-independent bodies, working under the supervision of the local or the Imperial Government, consisting of members partly nominated and partly elected with an official chairman and invested with powers to raise loans, levy dues on shipping and goods, charge wharfage fees and rents and provide terminal facilities at the port. This power to spend the money raised by debentures is very essential for the development of a port because, as the Royal Commission on the Port of London pointed out “the power of undertaking large expenditure and of working (if need be) for a long time at a loss, with a view to compensation in a distant future, is, no doubt, in the keen world competition, an advantage possessed by undertakings which have the force of Empire, State or a great city behind them. If in some countries national and municipal resources are thus employed, it becomes most difficult for private enterprise elsewhere to hold its own against the intelligent, far-sighted, and formidable rivalry thus created.” As a result privately owned terminal facilities are now a thing of the past. It might even

happen that private ownership of such public utility may endanger the interests of the community. Such a fear seems to lie behind the purchase, by the Government of Bombay, of the harbour frontage property of the Elphinstone Land and Press Company which had thus become, for all practical purposes, the owners of the harbour. As the official history of the formation of the Bombay Port Trust says "The decision to constitute a Board of Trustees for the administration of the affairs of the Port of Bombay originated in the apprehension on the part of Government that the interests of trade were seriously endangered by the possession, by private companies, of a monopoly of the landing and shipping facilities at the Port."

The case of railway ownership of ports is, of course, on a separate footing. Ocean water ways are, from the point of view of international trade, continuations of the inland railways and both the sections of this commercial activity benefit by a single authority in control of their meeting place, the port. For one thing, the port owned by a railway is keener to develop the traffic even at a cost of its annual income, a policy which will not be adopted by a private owner and cannot be adopted for long even by a port trust, but the railway can make up by increased land traffic what it loses on the port facilities. Such an arrangement, when circumstances permit it, has resulted in the provision of first rate facilities for the ships and

in the continuous development of the foreign trade of the country. It is to be hoped that the new port of Vizagapatam which is being built under the auspices of the Bengal-Nagpur Railway will come upto the expectations of the promoters of the scheme.

The financial operations of a port, moreover, depend upon the nature of the ownership. While the municipal or the railway port can afford to develop the trade even at the cost of their income from the port, a public trust must, by means of its rates, meet not merely the interest on borrowed capital but provide ways and means for the continued development of the facilities of the port. The Port Trusts must balance their annual budgets while the municipalities can, in case of need, draw upon their rates, thus in a way penalising the local population for the benefit of the country or a province as a whole; the railways may recoup their port losses either by increased traffic or by higher rates on their other lines of business.

Another principle of classification of ports is based upon whether the docks are locked or tidal. Though the latter are much cheaper to construct and maintain, they are possible only if the rise and fall of the tide does not exceed twelve feet. Hamburg and Glasgow, are examples of tidal docks, the range at Glasgow being only 10 feet even at spring tides. A low range of the tide along the whole of the east coast of North America allows almost all the ports on that

side to manage without locks. Where, however, the tidal range exceeds twelve feet, locks form a necessary adjunct of the port facilities and we find them provided in London and Liverpool, Bristol and Bombay. Of course, in ports like Rangoon and Calcutta which are situated on the banks of rivers, no docks, either closed or tidal, are provided their place being taken by open or river quays.

So far we have studied the question of the port from the point of view of the ship. Let us now look at the subject from the view point of the cargo. The value of the modern ship no less than that of the cargo requires that their safety should be the primary consideration of the port authorities. Besides providing berths or moorings for the vessels it is necessary to construct warehouses and transit sheds for the safe-keeping of the cargo while it is in the charge of the port authorities. Where, however, a large proportion of the cargo is, by the steamer's own winches, discharged overside into barges which through canals and waterways carry it to their destinations, the port need not provide a large number of cranes or of godowns and yet the port may have more trade than another owning numerous sheds and other facilities. Where, however, waterways are not available, the cargo is usually landed on the wharf and stored in the warehouse until delivery is taken of it except in a few cases where the cargo is discharged direct from the ship's

hold into the railway wagon or carted out immediately to meet the large local demand of the port town itself.

Ports like Bombay and Calcutta which provide both inward and outward cargo will naturally draw most shipping but there are some ports which are mere import ports such as London and others which are mere export ports as for example Bristol and Rangoon. There is, however, a class of port such as Southampton which is neither an export nor an import port, but serves merely as a junction for the passenger traffic between England and the Continent. What has particularly made Southampton a passenger port is its position at the head of two estuaries which causes it to have two tides thus providing a continuous high tide enabling even large-sized vessels to enter and leave the port at any hour of the day.

As said before, ports provide shelter for the steamers and the cargo by means of docks and warehouses respectively. But before the steamer can enter the harbour, her passage from the open seas must be rendered safe by means of a deep well-buoyed and well-lighted channel and before the cargo can be securely placed in the godowns machinery complementary to the ship's gear should be provided for its removal from the holds by means of cranes which are worked by steam or by electricity. Moreover, to remain in effective touch with the hinterland, most ports have a railway system of their own or where the port town

itself is a great consumer or exporter, special roads have to be provided for the quick removal of cargo.

The provision of these terminal facilities costs money and though the capital expenditure is usually met by loans, a large part of a port's income is derived by means of tonnage dues on vessels and cargo rates on goods. Taking the latter first, they are composed of wharfage charges, ground rent, rents for storage, etc. Schedules of commodities, their classes and rates of payment are published by the Port Trusts concerned. As regards the port dues, those payable along the Indian coast are charged under various heads such as port and dock dues, pilotage and berth fees, mooring and cranage charges as also coast light dues. Taking for example a steamer with a registered tonnage of 2,600 tons and a dead weight of 7,400 tons, we find that in port and allied charges, she will pay per day in Karachi Rs. 425, in Bombay Rs. 560, in Madras Rs. 360, in Calcutta Rs. 1,400 and in Rangoon Rs. 800. These figures explain why Calcutta is regarded as the most expensive port in India. This general study of ports, what they provide and how they are financed, may now be summed up with a statement giving useful statistics regarding the chief Indian ports. The following table, based upon figures taken from the annual Administration Reports, shows at a glance

the financial condition and the volume of the trade of each of the major ports of India.

1921—1922.

	Capital Ac- count.	Ordinary Revenue.	Ordinary Expenditure.	Establishment Charges.	Interest and Sinking Fund.	Net Registered Tonnage of Vessels entering the Port .	Total Export and Import. Tons.
	Lakhs.	Lakhs.	Lakhs.	Lakhs.	Lakhs.	Tons.	
Karachi ...	392	63·18	62·70	7·70	15·69	2,346,617	1,130,586
Bombay ...	1,949	217·17	227·80	53·88	85·81	5,401,178	6,725,000
Madras ...	393	25·43	23·21	...	...	1,943,159	874,080
Calcutta ...	1,848	219·17	240·39	60·13	63·35	3,446,021	3,981,777
Rangoon...	384	59·33	65·95	14·00	19·98	3,098,509	4,562,094
Total...	4,966	584·28	620·05	135·71	185·03	16,235,484	1,72,73,537

From figures let us turn to facts regarding the ports of India, studying at the same time the main products*the export of which is concentrated at these ports.

In proportion to her long coast line, India cannot be said to be fully endowed with an adequate number of ports to meet the requirements of her large trade. Five major ports distributed over a coast line of 4,500 miles, though supplemented with a fair number of minor ports, find it difficult to cope with the coastal and ocean trade of the country amounting in 1921-22

* The treatment of the products in the text is based largely upon Mr. Cotton's Handbook of Commercial Information for India and the Reports of the Indian Trade Enquiry held by the Imperial Institute.

to Rs. 1,25,94,74,669 and Rs. 5,79,43,71,724 respectively with the result that the natural development of trade is unnecessarily hampered.

Karachi is the nearest Indian port to Europe being only 1,450 miles from Aden which is separated from Bombay by 1,640 miles. Besides the distance from Basra to Karachi is about 470 miles less than from Basra to Bombay. For years it has been the gateway of foreign commerce not merely for the province of Sind but also for a great part of North-Western India, Baluchistan and Afghanistan. Though not an industrial centre, Karachi provides the principal market and the port of shipment for the districts mentioned. It also serves as a stock depot for the foreign goods consumed within its hinterland.

The principal railway line joining Karachi with its hinterland is the North-western railway which connects it with Lahore, the chief trading centre for the agricultural produce of that province and with Amritsar with its entreport trade in piece-goods and a large market for skins and hides. The narrow gauge line of the Jodhpur Bikaner Railway (Meter Gauge) meeting the North-western Railway (Broad Gauge) of the Hyderabad puts the port in touch with the court centres of Rajputana. Smaller feeder Railways help to convey the produce of Sind to the port of Karachi.

The capital account of the Karachi Port Trust amounts to a little over Rs. 4 crores of which Rs. 392

lakhs represent the cost price of Trustees' Properties. To begin with, however, the port was a shallow and land-locked lagoon inaccessible to any but small craft owing to the existence of a bar at the entrance, though there was fairly deep water inside, continued for many years to provide merely an anchorage with no docks, piers, wharves, etc., until in 1880 Lord Ripon laid the foundation of the first ship pier in Karachi named after the then Commissioner Sir W. L. Merewether. During the same year was constituted the Harbour Board which continued to function till 1886 when a new body was created by the Karachi Port Trust Act passed by the Government of Bombay. At that time the port facilities for accommodating steamers not exceeding 3,000 tons, consisted of 11 anchorages and moorings for ocean-going steamers, one pier, mentioned above, for a large steamer and a 680 feet wharf for the country craft trade. A new wharfage line, 2,000 feet long and capable of accommodating five ocean-going steamers was planned to be constructed and the work pushed ahead under the auspices of the newly-made Port Trust which has made great progress since as is seen from the fact that Karachi can to-day accommodate within the harbour all ships that can pass through the Suez Canal; those drawing 25 feet can cross the bar even at the lowest state of the tide while at the highest tide even ships drawing 30 feet can safely enter the harbour. The continuous wharfage line of

8,600 feet in length with 87 hydraulic cranes varying in capacity from 35 cwt. to 30 tons provides 17 berths while there are 20 moorings in the stream for ocean-going steamers. The special wharf for country craft trade has now a length of 1,824 feet. Besides there are special piers for heavy lifts and bulk oil, thus making Karachi a first class modern port, and also the largest wheat exporting port of the British Empire, the record figure being that of 1,380,000 dead weight tons of wheat in the year 1904-1905.

The Indian production of wheat amounts nearly to 10 per cent of the total world production. With its production of about 10 million tons of wheat, India takes the third place as a wheat growing country, the first and the second places being taken by the United States of America and Russia respectively.

The export ports for Indian wheat are Calcutta, Bombay and Karachi, the latter of which may be called the wheat port, as a large proportion of Indian wheat is exported from Karachi and because Karachi exports practically the whole of the quantity of wheat imported into it by the railways—the feature which differentiates that port from either Bombay or Calcutta which utilises a good proportion of the rail-borne wheat for grinding in the local flour mills.

Attention may here appropriately be drawn to an extract from the "Memorandum on Wheat" prepared by Sir James Wilson. "The railway freight of wheat

from Amritsar, one of the principal Punjab markets to Karachi, a distance of 816 miles, is $10\frac{1}{2}$ as. per maund or 5s. 3d. per quarter and the freight by sea from Karachi to London is now about 16s. per ton of 18 cwt. or 3s. 10d. per quarter so that the total cost of carriage would be 9s. 1d. per quarter and allowing for insurance, profit, etc., it would seem that it should pay to export wheat from the Punjab to London wherever it can be bought in the Punjab at, say, 11s. per quarter below the London price."

It will thus be seen that, so long as there is a diversity of 10s. per quarter between the Punjab and the English prices of wheat, the Punjab wheat will stand a very good chance of being sold in the London market.

Karachi commands a large wheat area and from most districts in the Punjab (except from places close to Bhatinda, Kot Kapura, Rewari and Delhi where other railway lines compete, *i. e.*, districts between Bhatinda and the Delhi junctions) the railway freights to Karachi by the North Western Railway being much lower, because of shorter distances, it draws the traffic in competition with Bombay, even though the Bombay prices may rule high.

Just as Karachi has in the matter of export of wheat from India to Europe a distinct advantage over Bombay due to her proximity to the wheat producing areas, the two chief ports of the Bombay Presidency

viz., Karachi and Bombay may be said to have even a greater advantage over Calcutta, so far as shipments of wheat to Europe are concerned. This will explain the position enjoyed by Karachi in this trade.

In normal years, the chief months of export are May, June, July and August.

India's place in the wheat market of the world dates from 1870 when the Suez Canal was opened. The early shipments were made from Calcutta but with the growth of the railway system in India, Bombay began to compete until Karachi with its hinterland of the wheat districts of the Punjab came on the scene and usurped the first place from them both. Besides, Karachi being a new city, it affords cheaper handling and greater storage facilities than are available at either of the two old Presidency town ports. Karachi, moreover, with its low rainfall of 5 inches per year facilitates storage in open sheds with very little risk of damage by rain, an advantage wholly wanting in Bombay with its heavy showers in the monsoon months and humid air throughout the year.

In Karachi shipment is usually made in bags of 2 cwts. net. Shipment to Europe varying in the Bombay weight from 182 to 224 lbs. net.

Quotations to the United Kingdom are generally per quarter of 492 lbs.

The average type of Indian wheat is what is commercially called soft, that of hard variety is

shipped from Bombay to Marseilles and Italy where it is used for the manufacture of macaroni.

In addition to Karachi, however, Sind possesses two other ports open to foreign trade, *viz.*, Ketī Bander and Sirganda. With no railway lines to provide them with a hinterland, it is not at all surprising that the trade from these two ports is insignificant. Whatever little trade they have is the result of their natural position on the mouths of the Indus. South of Sirganda are the ports of Mandvi and Dwarka situated in the territories of the Indian States of Cutch and Baroda. The industrial inertia which is prominent in a very large number of the Indian States has also descended upon these two ports with the result that they have been allowed to fall into second class ports. The port of Dwarka, however, promises to occupy an important place in the near future in view of the new industry of cement which is being established near it and the attempts made by the State of Baroda to provide a first class port at Adalja, about 16 miles north of Dwarka to meet the new requirements. It is to be hoped that the neighbouring port of Porebunder will also be developed in the near future in view of the establishment of the cement industry near that port as well particularly because the foreign trade of Porebunder was at one time very prosperous though unfortunately it is only a coastal trade port now. Bhavnagar and Verawal are other ports on the Kathiawad coast which deserve more attention. The port of Diu situated on the

southern most extremity of the Kathiawad Peninsula but on Portuguese territory is now rarely frequented by steamers, though at one time it had a flourishing trade with Mozambique. Between Diu and Bombay lie the ports of Surat, Broach, and Daman each with a prosperous shipping history of its own of which barely even the outward signs are visible to-day.

Bombay is perhaps the best equipped port along the Indian coast. Being like Karachi, a sea-port proper, Bombay, unlike Calcutta and Rangoon which are river ports situated at considerable distances from the sea, is well provided with an adequate system of wet docks furnished with the necessary quays, wharves and sheds. The water area of 104 acres provides over four miles of total quayage studded with 200 hydraulic cranes with capacity varying from 30 cwts. to 100 tons. The harbour railways, the cotton depot at Sewri and the new pier on the reclaimed Ballard Estate adequately meet the needs of the goods and passenger traffic of the port.

These facilities have been provided with a capital expenditure of Rs. 19.5 crores distributed in the main thus :—

	Rs. (Lakhs)
Princes Dock	96
Victoria Dock	125
Alexandra Dock... ..	524
Mereweather dry Dock... ..	12
Hughes dry Dock	42
Railways, estates, etc.	1150
	<u>1949</u>

The Hughes dry dock is one of the six largest dry docks in the world. Its length of 1,000 ft., breadth of 100 ft. and depth on sill of $36\frac{1}{2}$ feet at high water, make it the third longest in the world, the two longer ones being the Gladstone Dock Liverpool, 1,050 feet and the Quebec Dry Dock 1,150 feet.

Even so, the port of Bombay which has had the largest amount of money spent on its development, about 19·5 crores of rupees, compares very unfavourably with some of the large modern ports of the world. Bombay, with its water area of $104\frac{1}{2}$ acres and $4\frac{1}{2}$ miles of quayage, is a small port as compared with London or Liverpool, Manchester or Glasgow. London has eight deep water docks extending along 22 miles of the river Thames and covering a total land and water area of about 3,000 acres of which the water area separately amounts to 747 acres; the quayage extends to thirty miles. Liverpool has a water area of 600 acres with 36 miles of quays. The five docks of Manchester have a water area of 553 acres with 6·5 miles of quay, while Glasgow has 12 miles of quay with a water area of 241 acres.

The principal Indian products exported from Bombay are raw cotton and oil seeds; though their shipments are fairly common from Calcutta and to a smaller extent from Madras and Rangoon. For the sake of convenience, however, these products are discussed in detail under this port. Bombay,

owing to the products being largely confined to the presidency and its neighbourhood, has a preponderating share of the trade in these commodities.

The value of exported Indian cotton represents approximately one third of the total value of all the raw materials exported from India. The large extent of this trade is however dependent not merely upon the monsoon in India but also upon various outside factors such as the yield of American and Egyptian cotton as also the manufacturers' demands from the old and the new world. All the Indian crop of cotton is not, however, influenced by the vagaries of the monsoon as the Punjab and Sind are well provided with costly irrigation schemes. Owing, however, to the low fertility of the soil, the average yield of cotton per acre of land in India is less than 100 lbs. against 180 lbs. in the United States of America and even 300 lbs. in Egypt. Thus in 1921-22, the 18 million acres under cultivation in India yielded 16·5 million lbs. of cotton.

Cotton represents the remarkable instance of India having for years provided her manufacturing rivals with the raw product, thus enabling them to compete in a field which is destined by nature to be hers. The venue of the receiving countries has, however, undergone a change from England to the Far East. Lancashire which for many years consumed large quantities of Indian cotton now takes

five times as much cotton from Egypt and twenty-five times as much from America. Japan, its new rival in the Eastern market, has lately been the chief consumer of Indian cotton, the amount supplied in 1921 by India being 50 per cent of Japan's total import of raw cotton, and 55 per cent of India's available surplus for export. The arrangements made for the transport of the commodity from India are so perfect that even the carrying trade in cotton from India to Japan has passed from the British to the Japanese Companies.

There is, however, no reason why this trade and the similar traffic in the Indian monopolies of jute and some oil seeds should not be utilized to encourage Indian merchant shipping by charging specially favourable railway freight rates on through bills of lading on goods carried in Indian bottoms.

As regards Indian oil seeds, largely exported from Bombay, recent study has brought out the great importance of the Indian trade in oil seeds. Both the quantity and value are remarkable. The annual production of oil seeds is estimated at over 5,000,000 tons yielding a value of over £ 50,000,000. About one-third of the annual yield is exported to foreign countries.

India has, besides, a monopoly of castor seeds, mowra seeds, and niger seeds. India accounts for about 70% of the world's trade in poppy seeds and

rape and mustard seeds. India's share of the world's trade in ground nut, sesame seed, cotton seed and linseed is 46%, 42%, 33% and 23% respectively.

Taking linseed first, we find that it is grown in India for export of the seed, as also of the resultant oil and cake. It is surprising that the fibre of the plant is not utilised in the country for the manufacture of linen probably due to the low quality of the Indian article.

Though in 1904-05 India had practically the monopoly of the production of linseed, competition has since been experienced from the Argentine Republic, the United States of America, Canada and Russia with the result that India's share of the world's produce has been reduced to 23%.

The busy season for linseed shipments runs from May to July though small shipments are made throughout the year. Its chief competitor in the European market is the linseed from the River Plate and Argentina.

Bombay and Calcutta are the principal ports through which the Indian linseed is exported, the percentage of business done being a little over half the total quantity exported.

The Calcutta shipments are made in single B twill bags of 164 lbs. or double E bags of 183 lbs. net; while the Bombay shipments are made in bags of 168 to 196 lbs. gross,

Rape seed is exported from Karachi, Bombay and Calcutta. The European market for this seed is served in addition to India by Russia, Armenia and France. China and Japan as also the Argentine Republic and the Dutch East Indies have an exportable surplus available.

Shipment is made from Karachi in bags of 164 to 206 lbs. net, from Bombay in bags of 168 to 182 lbs. and from Calcutta in gunnies of 164 or 186 lbs.

Sesame seed, known as teel or gingelly seed, begins to arrive in the month of November, and the sales are pretty frequent and heavy till the end of March. Though all parts of India produce the seed, the chief port of export is Bombay. India's chief competitor in this line is China with its annual available surplus for export a little more than that of India. Marseilles and France were the central markets for this article until the Madras groundnuts ousted sesame.

Though Burma grows the seed, it is not exported as the whole produce is consumed within the country. Fair quantities of shipments are made to Europe from Cocanada, Bimilipatam, Vizagapatam and the Coromandel coast.

In Madras the unit of shipment is the single gunny bags of 164 lbs. net while in Bombay the bag holds from 154 to 168 lbs. net; the Karachi bags however, hold from 164 to 168 or 184 lbs. net.

With regard to cotton seed, India takes in the world's market the place next to that of the United States of America.

The unit of shipment is the bag of 140 lbs. in Bombay, the bag of $123\frac{3}{7}$ lbs. in Karachi and 165 lbs. in Madras. Shipments which begin in January are over by July.

Coming now to the oil seeds which were for long exclusively produced in India, her monopoly of castor seed is being faced with competition from Java, Indo-China and Manchuria which have recently taken up the growing of the seed on a commercial basis. Bombay may be said to be the port of shipment for this seed, fed with supplies from Central India and Hyderabad.

The market for castor seed runs from March to May and it is in summer that the shipments are the heaviest. Shipment goes forward from Bombay in single B twills of 154 to 168 lbs. net and from Calcutta in bags of 150 lbs. net.

India has also the monopoly of the production of the mowra and niger seeds, the annual shipments being about 30,000 tons and 10,000 tons respectively. Though Bombay is the chief port of shipment for mowra seed, Bombay and Madras (Bimilipatam and Vizagapatam) divide between them equal quantities of niger seed exported to Europe.

It will have been noticed already that these various seeds are not packed uniformly for purposes of shipment nor are they sold under a uniform unit of sale in the Indian markets ; for purposes of export, however, all quotations are based on a ton of 2,240 lbs. net c. i. f.

As regards the trade in these oil-seeds, according to the Reports on Oil Seeds published by the Imperial Institute in 1919, we find that before the outbreak of the European War, Germany had become at least equal to the United Kingdom in the matter of the import of oil seeds from India. Not merely were the more valuable seeds taken by Germany, but she was able to build up a lucrative transit and export trade in the manufactured articles such as oils, fats, margarine, etc. During the War, however, the imports of Indian oil-seeds into Germany automatically ceased, and the trade was diverted to the United Kingdom. After the Armistice, once again the imports into Germany increased whilst the share of Great Britain began to dwindle, as the following figures well indicate.

Imports of Indian Oil-seeds.

	1919-20.	1920-21.	1921-22.
	Rs.	Rs.	Rs.
United Kingdom ...	13,48,50,470	6,91,60,380	4,24,08,770
Germany	5,76,040	77,78,050	1,49,96,025

How these changes came about forms an interesting study from the point of view of shipping facilities and conditions. It has been said elsewhere that the

quoting of rates from India to U. K. Continent gives to the former country a decided advantage in the matter of freights because though the distance to the United Kingdom ports from the port of shipment may be greater than the distance to various continental ports, Great Britain has the advantage of an equality of rates. There are, however, cases in which this equality works against British interests.

Such a one is presented by the transport of seeds. The equality of freights from Calcutta, Madras and Bombay to Hamburg, the centre of the German oil industry and to Hull in England, in spite of the slightly greater distance from the Indian ports to Hamburg, gave the latter place an advantage in competing for transit and export trade in oil seeds to Russia and other Baltic ports which are closer to Hamburg than to Hull or London.

Larger benefits were derived by that trade by the system of co-ordination between the heads of ports, banks and business houses which before the war secured to Germany a great control in trade matters and enabled her to oust the earlier established houses in India.

While the port charges in Hamburg on oil seeds in transit cost 1 shilling per ton, those in London would have cost 1 sh. 9d. per ton, thus giving Hamburg an advantage of at least 9 d. per ton and sometimes even of 1 shilling per ton.

It has been said before that so far as the imports of the raw material, that is oil seeds, were concerned, Hamburg and Hull and London received equal treatment; the resulting difference, whatever its amount, was in favour of the German port; in so far as the export of manufactured articles to Russian and Scandinavian ports is concerned, the English merchants had to pay the higher cost of transport on oil and cake across the Northern sea and thus lost lucrative trade. Moreover the freights from Hamburg to the British ports were so low that it was possible for oil cakes made in Germany out of Indian oil seeds to be delivered on the East coast of England and Scotland at a cheaper price than that demanded by the British manufacturers.

In the light of these facts, the recommendations made by the Indian Trade Inquiry Committee of the Imperial Institute, in order to draw to Great Britain the trade in oils and oil seeds which before the war was being diverted more and more to Germany, are of so general an importance that particular interest attaches to the suggestions made by the Committee as regards their discriminating treatment in various adjuncts of the shipping industry and that valuable lessons may be drawn therefrom to the lasting benefit of India if their application be carried out in the proper spirit.

The suggestions are made under three heads :—

1. Oversea Transport of Indian Oil-seeds.

Shipment of Indian oil seeds in vessels owned within the Empire should be encouraged. To facilitate this, all possible steps should be taken to secure cheap transport facilities under British control, between the different parts of the Empire. One means to this end would be by discrimination in favour of such shipping as regards dues and charges within the Empire.

2. Transit and Re-Export Trade.

Steps should be taken to provide better and cheaper shipping facilities from India and the United Kingdom to Russian, Scandinavian, Mediterranean and other foreign ports, with which transit and re-export trade in Indian oil seeds was carried on through foreign countries before the war. Shipping companies should be asked to extend the system of giving optional destinations for cargoes at a nominal fee, and to develop the practice of quoting cheaper through fares to British merchants and brokers for cargoes ultimately destined for foreign countries.

3. Port Charges.

It is desirable, especially in the interests of the British transit and re-export trade in oil seeds, that charges in British ports should be reduced to at least the same level as those obtaining in the cheapest Northern Continental Ports.

These recommendations show how important a part shipping rates play in the creation and development of direct or transit trade markets. From the point of view of India, however, the intention should be not to discriminate between this or that European market in order that the British manufacturers, or merchants may be primarily benefitted, but to so arrange the shipping rates for export that the largest returns are made available for the Indian producer.

Shipping rates, however, are as stated above, based upon "what the traffic will bear." It follows, therefore, that the distance between two given places is relatively a secondary factor in the economics of shipping rates. It is no doubt true that in the allied subject of railways it is not unusual particularly in the United States of America for some States to adopt the principle of rigid distance tariffs. Ordinarily, however, the principle of the equal rate is more prevalent among railways and shipping companies than that of the distance rate. We may, therefore, well examine the former at some length. The benefits it guarantees includes an enlargement of the field of competition and consequent equalisation of prices over large areas; for example, the quotations of rates of freight from Indian ports—say Bombay to United Kingdom/Continent—brings about a much keener competition among the exporters of the Indian commodities to the European markets with the result that Indian raw materials

could be purchased in various European markets at the same rates whatever their distance from the port of origin.

This seems to be, no doubt, very satisfactory from the point of view of the importers of Indian commodities in the European markets, but the question which requires examination is whether it would not pay India better if—say—the oil-seeds to Hamburg had to pay a higher rate of freight than the oil-seeds shipped to Hull or London. It may, of course, be that the relative higher price of the Indian seeds in Hamburg as compared with their price in Hull might make it difficult for them to effectively compete with the Argentine seeds in Hamburg, but does it not at the same time follow that, if the shipping rates from Argentine to Europe as well as the shipping rates from India to Europe had been fixed on a different basis, the Indian producer would have got a better rate for his article than the one he gets to-day?

The distance between London and Rio De Janeiro, Rozario and San Lorenzo is 5335, 6665, 6680 nautical miles, while the distance between these ports and Hamburg is 5535, 6865 and 6880 nautical miles.

The distance between Bombay and Hull is 6420, between Bombay and Hamburg 6620 and between Bombay and London 6285 nautical miles.

An examination of these figures will show probably, if the equal rates did not prevail between India and

United Kingdom/Continent, the producer of the Indian commodities would have got a higher rate for his produce in certain European markets though it must, of course, be borne in mind that *pari passu* in some European markets the Indian produce could not have been sold at competitive rates.

Attention may here be drawn to the immense advantage the United Kingdom enjoys over continental ports in so far as the same rate of freight prevails not merely between India and United Kingdom Continent, but also between the River plate ports and United Kingdom Continent. This arrangement is the result of the predominance of the English shipowners in most of the Conferences on the continent; the penalty for breaking it is the payment of double the freight to the party aggrieved.

It is worth noticing that, while the Eastern and Plate rates are to United Kingdom/Continent or Mediterranean, the rates from the United States are quoted to the ports of various European countries specifically by name, for example, West Italy, Greece, Antwerp, Marseilles and French Atlantic; sometimes even to the Bordeaux Hamburg range, but only rarely to Continent or U. K./Continent.

The conclusion to be drawn from these facts is that the shipping rates indicate the markets in which the raw materials will be sold and the centres in which they will be manufactured. Where the rates upon the

raw product are not correlated to those upon the article finished therefrom, economic loss is bound to result particularly so in a country which is in a position to manufacture goods out of its own materials. That such a loss is incurred by India in connection with the oil seed business is now realised not merely by the people alone but also by the Government of India. To take up one aspect alone, not merely does the Indian get the smaller rate of profit on the exported oil seeds but pays the higher rate of profit to the foreign manufacturer of oils. The subject was therefore taken up some time back by the Department of Commercial Intelligence of the Government of India who published a bulletin on the vegetable oils and oil seeds of India. More interest in the subject has since been created in the country and during the last few years an oil industry worked by steam or other mechanical power has been developing in various provinces. Castor seed is being successfully crushed in Bombay, Punjab and the United Provinces, and mustard seed in Bengal while cocoanut oil mills are being established along the Malabar Coast in the West. At all these places, however, the old bullock mill is still at work. Though the internal needs of India are being met to a growing extent by hand and power mills, the really large mill catering for the foreign market has not yet been established though high hopes were entertained from the floatation of the Tata Oil Mills which has since, however, under the pressure of circumstances, decided to supply the home market only in preference to going further afield.

Three main difficulties are met with in the development of the foreign trade in oils. Firstly, the high protective tariffs of other countries prevent the import of Indian oils while the import of oil seeds into those very countries is encouraged by shipping and banking facilities. Secondly, the freight on oil-seeds is less than the freight on oil or oil cake; for example while the imported oil pays in freight 40% of its market value, the exported seeds are carried at a rate representing only 6% of the value. An idea of the rate of freight on oil-seeds from Bombay to U. K./Continent for the last fifty years may be had from the chart on p. 68. Thirdly, the transport of oil seeds in bulk or in bags is much easier and cheaper than the export of oil in casks, drums or tins which owing to the space taken up would entail very heavy freight charges unless a return cargo can be guaranteed which is only rarely possible. The alternative of shipment in bulk is not to be thought of when the individual shipments are so small. The whole business is enveloped in a vicious circle. Little oil is exported because transport is difficult and dear; cheap and modern methods of transport cannot be utilised because shipments are limited in quantity.

The only way to solve this difficulty is co-operation between the shipping and the milling industries which, judging from past experience, does not seem likely until powerful Indian Companies come forward to help each other.

Reverting to the main subject matter of the chapter, we find in the south of Bombay, along the Konkan coast, the small ports through which labour emigrates to the metropolis and provides a lucrative passenger traffic to the shipping companies engaged therein. Marmagao is, however, a port of some importance as it is the terminus of the West of India Portuguese Railway which manages the traffic of the port. The two important South Indian States of Hyderabad and Mysore provide the main articles, cotton and manganese, exported from Marmagao. The next port along the western coast, having the benefit of a direct railway connection, is Mangalore which is the north-western terminus of the South Indian Railway. The length of the coast line between Marmagao and Mangalore and the existence between the two of various ports small in spite of the productive areas behind them cannot but draw attention to the fact that these ports have remained undeveloped owing to the lack of railway facilities which, in its turn, results from a want of co-ordination between the ports that are British and their hinterlands lying within Indian state territories. Nevertheless the development of new ports like Bhatkul in the state of Mysore will greatly assist the trade of this part of the country. In contrast to the policy of indifference which hinders the growth of Kanara ports, stands out the case of the Port of Cochin which will develop into a first class harbour when the bar across

the entrance is permanently removed, through the combined efforts of the British Indian authorities and the states of Cochin and Travancore. When ready, the new port of Cochin will draw to itself a large part, of the traffic that now passes through the Coromandal ports. The ports of the Malabar have, moreover, the advantage of natural backwaters which afford cheap transport for the main articles of export namely coir, copra and cocoanut oil ; tea, coffee and rubber ; ginger, pepper and cardamoms.

Turning now to the eastern side of the peninsula, the first important port met with is Tuticorin which is being converted into a deep water harbour to accommodate modern steamers alongside the wharves on which are running the trains of the South Indian Railway. The passenger traffic between Tuticorin and Ceylon has recently been diverted to Dhanushkodi which provides a quicker route. The centre, however, of the passenger traffic of the Presidency of Madras is Negapatam whence sail, as deck passengers, the Indian labourers who work in the rubber and tea plantations of Ceylon and the Federated Malay States.

Madras, however, is naturally the chief port of the province. None of the major ports of India have registered so much advance during the fifteen years of this century, 1904-1919, as Madras which, at the former date, was a nominal harbour without even "a place for small craft to lie in shelter in dangerous weather.

Needless to say, this greatly discouraged the provision by capitalists of an adequate tonnage of lighters. Between highwater mark and the streets of the town of Madras there were to be found a few confused and ill-regulated railway-sidings and two or three exiguous sheds. The beach was to be seen at all times littered with timber, coal, railway materials, general cargo, machinery, liquors, etc., all in dire confusion. Every packet of dutiable goods landed along the beach, unless too big to be so handled was obliged to be carried on men's heads to the Government Custom house across the road, while goods arriving over the old screw pile pier had to be pushed into the same custom house on lorries. The entire dutiable trade of Madras had to pass in, and the empty lorries to pass out through one 10-foot custom house gate-way. The result was that it was no uncommon thing for a consignee not to get his packages under several weeks or even months. Machinery and railway packages used to be piled up in stacks, sometimes three or four deep, on the beach, and it was constantly happening that, before the cargo of one vessel could be delivered to waiting consignees, that of another had perforce, for want of sidings, to be dumped on top of it. In fact the arrangements were about as bad as they could possibly be."

All this was, however, changed owing to the foresight, perseverance and organizing powers of Sir Francis Spring who was Chairman of the Madras Port Trust during the fifteen years of reconstruction.

As a result the 200 acre harbour is smooth enough, in practically all weathers, for working cargo into and out of lighters as also for steamers to lie alongside of quays except during the period from October to January when a slight tossing is experienced. The harbour can accommodate fifteen deep draft vessels, the cargo being worked by sixty hydraulic cranes ranging in capacity from 1 ton to 33 tons.

As regards storage, six acres of land are covered by the warehouses of which three are provided with flat roofs to facilitate the drying of seeds, groundnuts etc. There are, besides, seven and a half acres of transit sheds. Special facilities include a two-acre pond for timber, a coal yard to hold 32,000 tons and a petrol berth outside the harbour backwater.

The expenditure on capital works in the Port of Madras amounts to over 3 crores of which 164 lakhs have been spent on the backwater, 32 lakhs on sheds and buildings, 31 lakhs on the west quay and the rest on plants and piers, wharves and moorings, railways and dredgers.

The staple product exported from the port of Madras is the ground-nut otherwise known as pea nut, earth nut or monkey nut. Though first exported to Europe as early as 1840, the Indian ground-nut was losing the European market towards the end of last century due to deterioration of the article itself

through disease. A better class of seed was, however, introduced in 1900-01 from Senegal and Mozambique with the result that India supplies to-day almost half of the world's demand for ground-nuts.

France consumes a very large share of the world's surplus of ground-nut available for export, the percentage being as high as 68. Marseilles is the most important European port to which the Indian ground-nut is shipped mostly from the Madras ports. The decorticated kernels are shipped in bags weighing 80 kilograms equal to 176 English lbs. net and are sold in Marseilles in francs per unit of 100 kilos.

In the local market different units prevail in the two parts of the Presidency of Madras. The southern districts quote their rates per French candy of 529·109 English lbs. while the northern districts at the English candy of 500 lbs. The sterling quotations are generally per ton of 2240 lbs. net c. i. f.

Europe imports ground-nut for extraction of oil and the best results are obtained from nuts shipped in the shell but the high cost of sea freights makes it impossible to ship unshelled ground-nuts, thus making it difficult for the Indian article to compete in the European market with its rivals from French West Africa, Gambia, Nagina, Nyasaland and the Sudan.

"Nuts when shipped in the shell occupy nearly double the space of the steamer than they take when

shipped as kernels. In this respect India is handicapped in comparison with the West Coast of Africa where the freight consideration is negligible, the bulk of the crop has always been shipped undecorticated. The want of adequate facilities for shipping at the minor ports in the Madras Presidency is a drawback to the South Indian trade."

These remarks of Mr. Cotton lend the weight of an unbiased opinion to the general complaint that the existing shipping lines do not pay sufficient attention to the trade requirements of the small ports along the coast of India.

Unless improvements are made in the Indian trade it is possible that the future requirements of France may be bought by that country from Senegal and other African districts under the French flag.

Predominance of Madras in the production of ground-nut has, during the last few years, been challenged by Burma, that country having produced 120,000 tons in 1915-16.

Below are given the rates for the carriage of ground-nuts from 1877 onwards. They may be studied in comparison with other similar rates given elsewhere.

Madras/Mediterranean
Seeds or Ground-nut Kernels

RATE PER TON OF 20 CWT.

Years.	Highest.	Lowest.	Years.	Highest.	Lowest.
Coromandel Coast to Mediterranean Seeds, etc., per ton.					
1875	...	...	1898	30/-	28/9
1876	...	...	1899	32/6	27/6
1877	75/-	67/6	1900	32/6	25/-
1878	...	...	1901	25/-	20/-
1879	60/-	47/6	1902	22/6	17/6
1880	70/-	52/6	1903	22/6	18/9
1881	70/-	60/-	1904	27/6	19/3
1882	67/6	50/-	1905	25/-	19/3
1883	57/6	45/-	1906	25/-	21/3
1884	40/-	33/9	1907	24/6	20/-
1885	50/-	30/-	1908	19/6	17/-
1886	41/3	31/3	1909	25/-	21/6
1887	37/6	30/-	1910	26/3	22/6
1888	55/-	30/-	1911	30/-	23/9
1889	45/-	30/-	1912	37/6	27/9
1890	38/9	26/3	1913	33/6	23/9
1891	42/6	31/3	1914	26/3	18/6
1892	35/-	23/9	1915	155/-	55/-
1893	30/-	22/6	1916	225/-	150/-
1894	31/3	26/3	1917	...	...
1895	28/9	21/9	1918	...	...
1896	19/6	17/6		per ton d. w.	
1897	22/6	15/-	1919	265/-	120/-

North of Madras until we reach Masulipatam there is a noticeable absence of large ports similar in nature to and between the same latitudes as the barren region between Marmogoa and Mangalore on the western side of the peninsula. The ports in this

locality have one factor in common namely that they are all open roadsteads, the ships anchoring at distances varying from two to seven miles from the port. However, the most interesting port of the Madras Presidency is Vizagapatam, whose potentialities are to be worked up by the Bengal Nagpur Railway, which is entrusted with its conversion into a deep water harbour and with an extension of its hinterland by construction of a new branch railway to Raipur, rich in minerals and oil-seeds. The Central Provinces will thus get a nearer outlet on the eastern coast of the Indian peninsula.

The ports of the neighbouring district of Orissa though of great historical interest have dwindled away, owing to the rivers upon which the towns stand having been allowed to be silted up and the trade of the province diverted to the distant Calcutta. Railway and shipping interests are suspected of complicity in the adoption of this policy whose disastrous results on the western coast are chronicled in the later history of Surat and Broach.

The self interest of Calcutta is also charged with hampering the growth of Chittagong, the natural outlet for the products of the province of Assam. It appears that unless the interested Railway Company,

the Assam Bengal Railway, is entrusted with the work of developing the port as is done in the case of Vizagapatam, Chittagong will have no prosperous future before it.

Under the circumstances the port of Calcutta alone serves the four Indian provinces of Bengal and Bihar, Assam and the United Provinces. Three railway lines provide transport for the cargo it exports. The East Indian Railway brings the grains and seeds, the Bengal Nagpur Railway the seeds from the Central Provinces and coal from the coalfields of Ranee-gunj while the Assam Bengal Railway conveys the jute and rice from Northern and Eastern Bengal.

The limits of the port extend, down the river Hugly, to 16 miles below Calcutta and its facilities include separate arrangements for the main articles of the trade of the port namely coal, timber, hides, grain, tea and sugar. A special wharf is allotted to petroleum at Budge Budge. There are, moreover, two graving docks and 66 cranes varying in capacity from 30 cwt. to 50 tons. The total area covered by the warehouses and sheds amounts to over 20 acres. It should be remembered that these facilities have been provided simultaneously with keeping the port open through miles of difficult navigation accomplished under the auspices of one of the most efficient pilot services in the world.

The capital expenditure of the Port of Calcutta amounts to over Rs. 17·3 crores distributed mainly as under—

	Rs. (Lakhs)
Jetties and wharves ...	... 2·72
Port and port approaches ...	... 1·15
Kidderpore docks ...	... 2·60
Other docks ...	... 4·19
Railways and Ferry Service...	1·46
	<hr/> 12·12

Its continuous growth since the first years of this century was checked by the war which largely curtailed the foreign trade of the port. It is worth noting that in this respect the ports on the east of India suffered more than those on the west as the latter particularly Karachi and Bombay benefitted by the military traffic, both in stores and passengers, which partly saved them from the full effects of the depression in trade.

Next to coal, jute is the most important commodity exported from Calcutta. That jute is a monopoly of India is a fact too well-known to require any discussion in detail. What is however not so equally strongly realised is that it is "a monopoly at a price," as was pointed out to the Indian Fiscal Commission by the Jute Manufacturers'

Association at Calcutta. It is unnecessary here to enter into a discussion as to the fiscal results of this contention. For our present requirements it is sufficient to know that owing to the inability of other countries to grow jute at competitive world prices and the failure to find substitutes, India holds a monopoly of the jute supply of the world.

The cultivation of jute in India is confined to Bengal, Bihar and Orissa, Assam, Cooch Bihar and Nepal. The fibre is obtained from the inner bark of the stems of *Corchorus Capsularis* and *Corchorus Olitorius*, annual plants belonging to the natural order *Tiliaceae*. The fibre is chiefly used in the manufacture of coarse textiles (gunny bags, hessians, scrims, etc.) ; as backing for linoleum ; for carpets, rugs and matting; thread, twine and cordage; and in admixture with other fibres for a large variety of fabrics. As a rule, the cheaper classes of goods are manufactured in the Indian Mills while the finer grades are woven by the Jute Mills of Dundee. The manufactures of jute bags have a peculiar interest particularly for the shipping industry in so far as most commodities, if not shipped in bulk, are packed in bags made of jute.

The relative importance of jute in Indian cultivation will be seen from the following table compiled

under the auspices of the Imperial Institute of London :—

**Table showing market value of produce per acre for
Rice, Wheat, Cotton and Jute in India.**

(AVERAGE FIGURES FOR TEN YEARS 1904-13 INCLUSIVE.)

Crop.	Area.	Yield.	Yield per Acre.	Whole- sale price per maund.	Market value of produce per acre.
	Acres.		Maunds.		
Rice ...	569,895,465	24,025,508 tons.	11.5	Rs. 4.75	Rs. 54.62
Wheat ...	28,145,474	8,752,354 tons.	8.4	Rs. 3.73	Rs. 31.33
Cotton...	20,979,500	3,836,966 bales. (685,173 tons.)	0.88	Rs. 28.3	Rs. 25.04
Jute ...	3,114,420	8,298,590 bales. (1,481,891 tons.)	12.9	Rs. 9.68	Rs. 128.79

Attention may be drawn to the fact that though occupying the last place as regards the area under cultivation, jute yields the highest market value for the produce per acre.

As regards the consumption of jute in manufacture, it is satisfactory to note that about 60 % of the annual produce is turned into cloth in India, though it is not equally satisfactory that almost all the jute mills

in Bengal should be under European management and that all skilled labour employed in the industry should be imported from Dundee. It is high time that Indian capital and enterprise were drawn in this important industrial activity. The jute that cannot be utilised by the mills in India is naturally exported to foreign countries and the following table shows the relative rise and importance of various countries as jute manufacturers :—

Consumption of Raw Jute, 1901-3 and 1911-13.

Country.	Period.	Average Consumption.	
		Metric Tons.	
United Kingdom	1901-3	216,908*	
	1911-13	218,962*	
France	1901-3	90,799	
	1911-13	99,897	
Italy	1901-3	24,428	
	1911-13	37,864	
Spain	1901-3	16,021	
	1911-13	27,903	
United States	1901-3	103,935*	
	1911-13	96,977*	
Germany	1901-3	116,483	
	1911-13	146,746	
Austria-Hungary	1901-3	44,551	
	1911-13	57,191	

* Long Tons.

It will be noticed that before the war the jute manufacture though growing in all the countries concerned except the United States of America was practically stagnant in the United Kingdom was growing very rapidly in Spain and Italy, in Austria and in Germany. Considering the quantity manufactured, Germany shows the greatest development by an annual consumption equalling 66 per cent of the total requirements of the United Kingdom. Not merely had the German jute industry been making a rapid progress before the war, but it was done at the cost of the British manufacturer for whom stagnation meant a relative push backwards as will be seen from the fact that while "during the ten years ending with March 31st, 1897, the United Kingdom took over 80 per cent of the exports of raw jute from India, during the decennium 1900—1909 she took only 40 per cent of the exports."*

Among the methods employed by the continental states for the development of jute manufactures in their countries are some that have a great interest from the point of view of shipping and its development. It is stated that "Austria and Italy granted preferential railway rates on jute passing into the interior, provided such jute was brought from India in Austrian or Italian vessels. German buyers generally stipulated that the raw material should be shipped in German

* From a report by the Committee of the Indian Jute Mills Association on the subject of trade after the war.

vessels, and up to the outbreak of war, the Hansa Line held a monopoly in the direct shipments to Hamburg and Bremen, jute shipped to Germany *via* London being penalised by extra port dues on arrival at destination."*

Growing exports to the continent of another article, the trade in which was during the last century wholly restricted to the United Kingdom, also deserves notice. Before the great war, Indian hideg and skins, largely exported from Calcutta, had come by stages to be controlled by a German ring who diverted the trade to the continent. This trade naturally came to an abrupt end with the opening of hostilities but has again revived since the armistice in spite of legislation intended to grant preference to countries within the British Empire. The following figures speak for themselves.

Export of Hides and skins from India.

	1919-20.	1920-21.	1921-22.
	Tons.	Tons.	Tons.
Total British Empire	20,761	7,284	6,218.
Germany	67	3,740	11,765.

The accompanying table gives, for purposes of comparison, the freight rates on jute shipped from Calcutta.

* From a Memorandum by the Dundee Chamber of Commerce and the London Jute Association, representing British jute interests.

Calcutta/U. K. Continent

Jute.

RATE PER CALCUTTA SCALE.

Years.	Highest.	Lowest.	Years.	Highest.	Lowest.
1871	100/-	90/-	1895	30/-	18/6
1872	92/6	60/-	1896	22/6	12/6
1873	95/-	80/-	1897	32/6	15/-
1874	...	...	1898	37/6	22/6
1875	...	...	1899	31/3	25/-
	Wheat etc.		1900	33/3	21/3
1876	80/-	75/-	1901	25/-	19/6
1877	75/-	45/-	1902	23/9	16/3
1878	60/-	32/6	1903	21/3	17/6
1879	80/-	40/-	1904	30/-	20/6
1880	85/-	60/-	1905	25/-	17/-
1881	75/-	60/-	1906	26/3	17/6
1882	65/-	40/-	1907	20/-	18/9
1883	60/-	45/-	1908	20/-	12/6
1884	42/6	27/6	1909	24/9	20/-
1885	37/6	32/6	1910	24/-	13/6
1886	33/9	27/6	1911	32/6	21/3
1887	35/-	27/6	1912	36/3	27/6
1888	60/-	30/-	1913	33/-	20/6
1889	45/-	30/-	1914	35/-	17/6
1890	36/3	22/6	1915	150/-	34/3
1891	40/-	32/6	1916	210/-	137/6
1892	33/9	12/6	1917	915/-	300/-
1893	30/6	20/-	1918	1,000/-	300/-
1894	32/6	22/6	1919	185/-	177/-

Just as Calcutta is the centre for the trade in jute Rangoon, the last major port of India, is a rice port *par excellence*, and the chief port of the province as about 80 per cent of the coasting trade and about 90 per cent of the foreign trade passes under the shadow of the

Schwe Dagon. Recently, moreover, a large portion of the trade of Moulmein, the second port of the province, has been diverted to Rangoon owing to the railway having been extended to Martaban on the other side of the river Salween separating it from Moulmein.

Rangoon, though the third Indian port in the volume and value of its trade,* cannot be said to be so effectively equipped as are Bombay and Calcutta; for example she lacks a dry dock for ocean-going vessels nor is there a proper harbour; yet the conveniences for loading, unloading and storing of cargo are efficient enough to make Rangoon the first port in India for despatch. Its backwardness in other respects, however, is due to the shifting of the river bed and the sands of the Hastings shoal; the former difficulty has been partly removed by the erection of the river training wall under the guidance of Sir George Buchanan-partly because it has added a fresh danger from an accumulation of sand just beyond the wall limits. The existing danger arising out of the shoal is met by deep draft steamers completing their loading of cargo below Hastings to avoid being neaped. To avoid all these difficulties, it is now proposed that a new harbour should be built on the Dawbon site which, in addition to providing the much wanted dry dock, will enable vessels of even 35 feet draft to get to their berths at

* The traffic handled in 1921-22 amounted to 2,511,095 tons, the highest on record. The importance of Rangoon as a passenger port has been examined fully on p. 251 et seq.